

GEORGIA DEPARTMENT OF TRANSPORTATION

GDOT Project No: NH000-0575-01(028)

PI No: 713640

JBT Project No. 255717

Bridge No. 37

I-575 REVERSIBLE OVER BIG SHANTY RD

November, 2009

COBB COUNTY

DESIGN CALCULATIONS

Note 1: Georgia Department of Transportation (GDOT) terminated Contract Number TOURDPPI60072 for its convenience prior to the completion of all work under that contract and directed that the work with respect to these calculations be discontinued.

(a) These calculations were not completed at the time of GDOT's direction and the information contained herein is not complete and/or has not been fully verified or checked. These calculations are a work-in-progress and are presented only as such.

(b) Any user is cautioned that the use of these calculations and any related information or calculations, without access to pertinent factors and without proper regard for their purpose, could lead to erroneous conclusions.

(c) If any such calculations or any information contained herein is used in future work efforts or any follow on design work activity, a complete confirmation of the information contained herein should be performed prior to any such use.

(d) GTP has no responsibility for the use of this information not under its direct control.

Prepared for Georgia Transportation Partners
Atlanta, Georgia

J.B. TRIMBLE, INC.
2550 Heritage Ct. SE - Suite 200
Atlanta, GA 30338-3082
(770) 952-1022

Purpose of Calculation

Bridge design calculations for Bridge #37 were made for costing purposes.

1. Specifications and References

AASHTO 17th Edition, 2002

GDOT Bridge Design Manual, 2008

2. Computer

Computer Type Used: PC

Operating System: Windows XP, Pentium 4, 2GB RAM (min.)

3. Computer Programs (Standard Computer Program)

Excel, Microsoft Office 2003 – JBT Calculation Spreadsheets

BRLLCA, 2008 – Live Load Case Program, by GDOT

BRPIER, 2008 – Pier Design and Analysis, by GDOT

BRSPAN, 2008 – Simple Beam Design and Analysis, by GDOT

LEAP Geomath 08.01.00.01 – Bridge and Structure Geometry, by Bentley Systems Inc.

CALCULATION COVER SHEET

PROJECT	JOB NO.	CALC NO.	SHEET
I-75 / I-575 NORTHWEST CORRIDOR	NH000-0575-01(028)	BR#37	1
SUBJECT	DISCIPLINE		
Bridge Geometry Output	STRUCTURAL		

CALCULATION STATUS DESIGNATION	PRELIMINARY	CONFIRMED	SUPSEDED	VOIDED	INCOMPLETE
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

COMPUTER PROGRAM/TYPE	SCP	MAINFRAME	PC	PROGRAM	VERSION/RELEASE NO.
	<input checked="" type="radio"/> YES <input type="radio"/> NO	<input type="radio"/>	<input checked="" type="radio"/>	LEAP GEOMATH	08.01.00.01

Note 1: Georgia Department of Transportation (GDOT) terminated Contract Number TOURDPP160072 for its convenience the completion of all work under that contract and directed that the work with respect to these calculations be discontinued

- (a) These calculations were not completed at the time of GDOT's direction and the information contained herein is not and/or has not been fully verified or checked. These calculations are a work-in-progress and are presented only as such.
- (b) Any user is cautioned that the use of these calculations and any related information or calculations, without access to factors and without proper regard for their purpose, could lead to erroneous conclusions.
- (c) If any such calculations or any information contained herein is used in future work efforts or any follow on design work a complete confirmation of the information contained herein should be performed prior to any such use.
- (d) GTP has no responsibility for the use of this information not under its direct control.

A	As per GDOT's termination for convenience direction	25	25	JCR			11/30/09
NO.	REASON FOR REVISION	TOTAL NO. OF SHEETS	LAST SHEET NO.	BY	CHECKED	APPROVED/ ACCEPTED	DATE
RECORD OF REVISIONS							

CALCULATION SHEET

PROJECT: I-75 / I-575 NORTHWEST CORRIDOR
JOB NUMBER NH000-0575-01(028)
CALC NO. BR#37

SUBJECT: Bridge Geometry Output
BY: JCR DATE: 11/30/2009

SHEET NO.
SHEET REV.

Sufficient sample calculations representative of the scope and conditions in the design calculation were performed and the results compared to demonstrate the computer program adequacy.

PJC
10-13-09

Hatch Mott MacDonald Phone: | Sheet 1 of 1
| Job No:
Program: LEAP® GEOMATH® Ver: 08.01.00.01 (c) Bentley Systems, Inc | Date: 10/13/2009
Phone: 800-778-4277 Web-Site: www.bentley.com | By:

Filename: N:\TRA\255717\Eng\BR37\Geomath\I-575 BR37.gmd

Alignment ID: 575align

Start Station: 1131+56.0807

P.I.	North	East Trans	Spiral-In	Spiral-Out	Radius
1	1,464,967.2430	2,177,372.1042	None		
2	1,467,148.7660	2,177,009.8572	None		

***** End of Report *****

PJC
10-13-09

Hatch Mott MacDonald Phone: | Sheet 1 of 1
| Job No:
Program: LEAP® GEOMATH® Ver: 08.01.00.01 (c) Bentley Systems, Inc | Date: 10/13/2009
Phone: 800-778-4277 Web-Site: www.bentley.com | By:

Filename: N:\TRA\255717\Eng\BR37\Geomath\I-575 BR37.gmd

Alignment ID: 575align

Element # 1 Shape: Tangent

	Station	North	East	Direction	Radius
Start:	1131+56.0807 ✓	1,464,967.2430 ✓	2,177,372.1042 ✓	N 9 25 41.06 W ✓	INFINITY
End:	1153+67.4752 ✓	1,467,148.7660 ✓	2,177,009.8572 ✓	N 9 25 41.06 W ✓	INFINITY
Length:	2,211.3945 ✓		Delta:	0 00 00.00	

***** End of Report *****

PSC 10/13/09

Hatch Mott MacDonald Phone: | Sheet 1 of 1
| Job No:
Program: LEAP® GEOMATH® Ver: 08.01.00.01 (c) Bentley Systems, Inc | Date: 10/13/2009
Phone: 800-778-4277 Web-Site: www.bentley.com | By:

Filename: N:\TRA\255717\Eng\BR37\Geomath\I-575 BR37.gmd

Profile ID: 575vert

VPI	Station	Elevation	Trans	Parabola-1	Parabola-2
1	1139+00.0000 ✓	964.4000 ✓	None		
2	1143+00.0000 ✓	968.6000 ✓	None		

***** End of Report *****

PJC 10-3-09

Hatch Mott MacDonald Phone: | Sheet 1 of 1
' ' | Job No:
Program: LEAP® GEOMATH® Ver: 08.01.00.01 (c) Bentley Systems, Inc | Date: 10/13/2009
Phone: 800-778-4277 Web-Site: www.bentley.com | By:

Filename: N:\TRA\255717\Eng\BR37\Geomath\I-575 BR37.gmd

Profile ID: 575vert

Elem	Start	End	Apex	Transition
1 Sta	1139+00.0000	1143+00.0000	None	Length 400.0000
Elev	964.4000	968.6000	None	Type Tangent
Grade	0.0105	0.0105		

***** End of Report *****

PJC 10-14-09

Hatch Mott MacDonald

Phone:

| Sheet 1 of 1

| Job No:

Program: LEAP® GEOMATH® Ver: 08.01.00.01 (c) Bentley Systems, Inc | Date: 10/14/2009
 Phone: 800-778-4277 Web-Site: www.bentley.com | By:

Filename: N:\TRA\255717\Eng\BR37\Geomath\I-575 BR37-2.gmd

XSection ID: 575xsect

SLOPE BREAK POINTS: 6

STATION	PGL-OFFSET	POINT	DIST-FR-PGL	GRADE	DESCRIPTION
1139+00.0000	0.0000	1	-47.7708		
				-0.010400	BAR
		2	-46.1458		
				-0.010400	IFBAR-HOVB
		3	-20.1458		
				-0.010400	HOVBAR
		4	-18.1458		
				-0.010400	HOVB-CUTLN
		5	-4.1667		
				-0.010400	CUTLN-HOVB
		6	0.0000		

SLOPE BREAK POINTS: 6

STATION	PGL-OFFSET	POINT	DIST-FR-PGL	GRADE	DESCRIPTION
1143+00.0000	0.0000	1	-42.0542		
				-0.010400	BAR
		2	-40.4292		
				-0.010400	IFBAR-HOVB
		3	-14.4292		
				-0.010400	HOVBAR
		4	-12.4292		
				-0.010400	HOVB-CUTLN
		5	-4.1667		
				-0.010400	CUTLN-HOVB
		6	0.0000		

***** End of Report *****

Feet

Datafile Modification Date: 10/14/2009 13:09

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10-14-09

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, , | Job No:
Program: LEAP® GEOMATH® Ver: 08.01.00.01 (c) Bentley Systems, Inc | Date: 10/13/2009
Phone: 800-778-4277 Web-Site: www.bentley.com | By:

Filename: N:\TRA\255717\Eng\BR37\Geomath\I-575 BR37.gmd

XSection ID: E-575NBxsect *EXISTING NB*

SLOPE BREAK POINTS: 5

STATION	PGL-OFFSET	POINT	DIST-FR-PGL	GRADE	DESCRIPTION
1140+00.0000	0.0000 ✓	1	-7.4167 ✓	-0.010400	
		2	-5.2500 ✓	-0.010400	
		3	0.0000 ✓	-0.010400	
		4	35.2500 ✓	-0.010400	
		5	37.4167 ✓		

SLOPE BREAK POINTS: 5

STATION	PGL-OFFSET	POINT	DIST-FR-PGL	GRADE	DESCRIPTION
1142+50.0000	0.0000 ✓	1	-7.4167 ✓	-0.010400	
		2	-5.2500 ✓	-0.010400	
		3	0.0000 ✓	-0.010400	
		4	35.2500 ✓	-0.010400	
		5	37.4167 ✓		

***** End of Report *****

Hatch Mott MacDonald

Phone:

| Sheet 1 of 1

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| Job No:

Program: LEAP® GEOMATH® Ver: 08.01.00.01 (c) Bentley Systems, Inc | Date: 10/13/2009

Phone: 800-778-4277

Web-Site: www.bentley.com | By:

PJC
10-14-09

Filename: N:\TRA\255717\Eng\BR37\Geomath\I-575 BR37.gmd

XSection ID: E-575SBxsect

EXIST. SB

SLOPE BREAK POINTS: 5

STATION	PGL-OFFSET	POINT	DIST-FR-PGL	GRADE	DESCRIPTION
1140+00.0000	-64.0000	1	-37.4167		
		2	-35.2500	0.010400	
		3	0.0000	0.010400	
		4	5.2500	0.010400	
		5	7.4167	0.010400	

SLOPE BREAK POINTS: 5

STATION	PGL-OFFSET	POINT	DIST-FR-PGL	GRADE	DESCRIPTION
1142+50.0000	-64.0000	1	-37.4167		
		2	-35.2500	0.010400	
		3	0.0000	0.010400	
		4	5.2500	0.010400	
		5	7.4167	0.010400	

***** End of Report *****

Feet

Datafile Modification Date: 10/13/2009 14:02

Hatch Mott MacDonald

Phone:

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Job No:

Program: LEAP® GEOMATH® Ver: 08.01.00.01 (c) Bentley Systems, Inc | Date: 10/13/2009

Phone: 800-778-4277

Web-Site: www.bentley.com | By:

Filename: N:\TRA\255717\Eng\BR37\Geomath\I-575 BR37.gmd

Alignment ID: BigShalign

Start Station: 247+49.6578

P.I.	North	East	Trans	Spiral-In	Spiral-Out	Radius
1	1,465,828.7390 ✓	2,176,980.0290 ✓	None			
2	1,465,990.2796 ✓	2,177,394.8591 ✓	Arc			1,000.0000 ✓
3	1,465,940.8972 ✓	2,177,671.5395 ✓	None			

***** End of Report *****

Feet

Datafile Modification Date: 10/13/2009 14:02

Hatch Mott MacDonald Phone: | Sheet 1 of 1
 Program: LEAP® GEOMATH® Ver: 08.01.00.01 (c) Bentley Systems, Inc | Job No:
 Phone: 800-778-4277 Web-Site: www.bentley.com | Date: 10/13/2009
 By:

Filename: N:\TRA\255717\Eng\BR37\Geomath\I-575 BR37.gmd

Alignment ID: BigShalign

Element # 1 Shape: Tangent

	Station	North	East	Direction	Radius
Start:	247+49.6578	1,465,828.7390	2,176,980.0290	N 68 43 24.13 E	INFINITY
End:	249+13.7785	1,465,888.2937	2,177,132.9632	N 68 43 24.13 E	INFINITY
Length:	164.1207		Delta:	0 00 00.00	

Transition Point: TC Station: 249+13.7785

Element # 2 Shape: Arc Radius 1,000.0000

	Station	North	East	Direction	Radius
Start:	249+13.7785	1,465,888.2937	2,177,132.9632	N 68 43 24.13 E	1,000.0000
End:	254+61.7477	1,465,940.8972	2,177,671.5394	S 79 52 49.11 E	1,000.0000
Length:	547.9692	Sense: Right	Delta:	31 23 46.76	

Transition Point: CT Station: 254+61.7477

Element # 3 Shape: Tangent

	Station	North	East	Direction	Radius
Start:	254+61.7477	1,465,940.8972	2,177,671.5394	S 79 52 49.14 E	INFINITY
End:	254+61.7478	1,465,940.8972	2,177,671.5395	S 79 52 49.14 E	INFINITY
Length:	0.0001		Delta:	0 00 00.00	

***** End of Report *****

Hatch Mott MacDonald Phone: | Sheet 1 of 1
 , , | Job No:
 Program: LEAP® GEOMATH® Ver: 08.01.00.01 (c) Bentley Systems, Inc | Date: 10/13/2009
 Phone: 800-778-4277 Web-Site: www.bentley.com | By:

Hatch Mott MacDonald

Phone:

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Program: LEAP® GEOMATH® Ver: 08.01.00.01 (c) Bentley Systems, Inc | Date: 10/13/2009

Phone: 800-778-4277

Web-Site: www.bentley.com | By:

Filename: N:\TRA\255717\Eng\BR37\Geomath\I-575 BR37.gmd

Profile ID: BigShvert

Elem		Start	End	Apex		Transition
1	Sta	248+00.0000	248+50.0000	None	Length	50.0000
	Elev	944.0576	944.2345	None	Type	Tangent
	Grade	0.0035	0.0035			
3	Sta	248+50.0000	249+00.0000	None	Length	50.0000
	Elev	944.2345	944.3917	None	Type	Tangent
	Grade	0.0031	0.0031			
5	Sta	249+00.0000	249+50.0000	None	Length	50.0000
	Elev	944.3917	944.5492	None	Type	Tangent
	Grade	0.0032	0.0032			
7	Sta	249+50.0000	250+00.0000	None	Length	50.0000
	Elev	944.5492	944.6963	None	Type	Tangent
	Grade	0.0029	0.0029			
9	Sta	250+00.0000	250+50.0000	None	Length	50.0000
	Elev	944.6963	944.8132	None	Type	Tangent
	Grade	0.0023	0.0023			
11	Sta	250+50.0000	251+00.0000	None	Length	50.0000
	Elev	944.8132	944.8383	None	Type	Tangent
	Grade	0.0005	0.0005			
13	Sta	251+00.0000	251+50.0000	None	Length	50.0000
	Elev	944.8383	944.9736	None	Type	Tangent
	Grade	0.0027	0.0027			
15	Sta	251+50.0000	252+00.0000	None	Length	50.0000
	Elev	944.9736	945.1654	None	Type	Tangent
	Grade	0.0038	0.0038			

***** End of Report *****

Feet

Datafile Modification Date: 10/13/2009 14:02

Hatch Mott MacDonald

Phone:

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| Job No:

Program: LEAP® GEOMATH® Ver: 08.01.00.01 (c) Bentley Systems, Inc | Date: 10/14/2009

Phone: 800-778-4277

Web-Site: www.bentley.com | By:

Filename: N:\TRA\255717\Eng\BR37\Geomath\I-575 BR37.gmd

XSection ID: BigShxsect

SLOPE BREAK POINTS: 3

STATION	PGL-OFFSET	POINT	DIST-FR-PGL	GRADE	DESCRIPTION
248+00.0000	0.0000	1	-24.0000	-0.080000	
		2	0.0000	-0.080000	
		3	24.0000		

SLOPE BREAK POINTS: 3

STATION	PGL-OFFSET	POINT	DIST-FR-PGL	GRADE	DESCRIPTION
252+00.0000	0.0000	1	-24.0000	-0.080000	
		2	0.0000	-0.080000	
		3	24.0000		

***** End of Report *****

Hatch Mott MacDonald

Phone:

| Sheet 1 of 1

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| Job No:

Program: LEAP® GEOMATH® Ver: 08.01.00.01 (c) Bentley Systems, Inc | Date: 10/14/2009

Phone: 800-778-4277

Web-Site: www.bentley.com | By:

Filename: N:\TRA\255717\Eng\BR37\Geomath\I-575 BR37.gmd

COORDINATE REPORT

Station Ref: 575

ID	STATION	OFFSET (ft)	NORTH (ft)	EAST (ft)	575 ELEV (ft)
B1&PGL	1140+37.2500	0.0000	1,465,836.5095	2,177,227.7605	965.8411
B2&PGL	1140+78.2500	0.0000	1,465,876.9557	2,177,221.0443	966.2716
B3&PGL	1141+58.2500	0.0000	1,465,955.8750	2,177,207.9395	967.1116
B4&PGL	1141+94.2500	0.0000	1,465,991.3887	2,177,202.0424	967.4896
B1&EOD	1140+29.7334	-45.9167	1,465,821.5728	2,177,183.6953	966.2397
B4&EOD	1141+87.1015	-43.6677	1,465,977.1837	2,177,160.1356	967.8687
BScl&575cl	1141+17.9083	0.0000	1,465,916.0782	2,177,214.5479	966.6880
Intersection:	0.0000ft LT BigShalign 249+99.9914			= 0.0000ft RT 575align 1141+17.9083	
E-CL&E-B1 R	1140+32.0116	-32.0000	1,465,826.0999	2,177,197.0508	966.1189
E-CL&E-B4R	1141+89.0116	-32.0000	1,465,980.9791	2,177,171.3328	967.7674

***** End of Report *****

Feet

Datafile Modification Date: 10/14/2009 08:35

Hatch Mott MacDonald

Phone:

| Sheet 1 of 1

, ,

| Job No:

Program: LEAP® GEOMATH® Ver: 08.01.00.01 (c) Bentley Systems, Inc | Date: 10/14/2009

Phone: 800-778-4277

Web-Site: www.bentley.com | By:

Filename: N:\TRA\255717\Eng\BR37\Geomath\I-575 BR37.gmd

SPAN AND GIRDER REPORT

SPAN ID: B1-B2 ROADWAY: 575 ALIGNMENT: 575align NUMBER OF GIRDERS: 5
 STARTING PIER: B1 STATION: 1140+37.2500 AZM: N 71.274984 SKEW: -9.296944
 ENDING PIER: B2 STATION: 1140+78.2500 AZM: N 71.274984 SKEW: -9.296944

GIRDER	END POINT DISTANCES ALONG PIER CL			LENGTH		
	START	END	AZIMUTH	CL - CL	SEAT-SEAT	RADIUS
S1-G1	3.0474	1.5770	N 351.390720	41.1003	38.8148	INFINITY
S1-G2	11.6531	9.5876	N 350.571928	41.0000	38.7201	INFINITY
S1-G3	20.2663	18.2008	N 350.571928	41.0000	38.7201	INFINITY
S1-G4	28.8794	26.8139	N 350.571928	41.0000	38.7201	INFINITY
S1-G5	37.4925	35.4270	N 350.571928	41.0000	38.7201	INFINITY

***** End of Report *****

Hatch Mott MacDonald

Phone:

| Sheet 1 of 1

, ,

| Job No:

Program: LEAP® GEOMATH® Ver: 08.01.00.01 (c) Bentley Systems, Inc | Date: 10/14/2009

Phone: 800-778-4277

Web-Site: www.bentley.com | By:

Filename: N:\TRA\255717\Eng\BR37\Geomath\I-575 BR37.gmd

SPAN AND GIRDER REPORT

SPAN ID: B2-B3 ROADWAY: 575 ALIGNMENT: 575align NUMBER OF GIRDERS: 5
 STARTING PIER: B2 STATION: 1140+78.2500 AZM: N 71.274984 SKEW: -9.296944
 ENDING PIER: B3 STATION: 1141+58.2500 AZM: N 71.274984 SKEW: -9.296944

GIRDER	END POINT DISTANCES ALONG PIER CL			LENGTH		
	START	END	AZIMUTH	CL - CL	SEAT-SEAT	RADIUS
S2-G1	1.5770	1.7383	N 351.390720	80.1958	78.6721	INFINITY
S2-G2	9.5876	8.5876	N 350.571928	80.0000	78.4800	INFINITY
S2-G3	18.2008	17.2008	N 350.571928	80.0000	78.4800	INFINITY
S2-G4	26.8139	25.8139	N 350.571928	80.0000	78.4800	INFINITY
S2-G5	35.4270	34.4270	N 350.571928	80.0000	78.4800	INFINITY

***** End of Report *****

Hatch Mott MacDonald

Phone:

| Sheet 1 of 1

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| Job No:

Program: LEAP® GEOMATH® Ver: 08.01.00.01 (c) Bentley Systems, Inc | Date: 10/14/2009

Phone: 800-778-4277

Web-Site: www.bentley.com | By:

Filename: N:\TRA\255717\Eng\BR37\Geomath\I-575 BR37.gmd

SPAN AND GIRDER REPORT

SPAN ID: B3-B4 ROADWAY: 575 ALIGNMENT: 575align NUMBER OF GIRDERS: 5
 STARTING PIER: B3 STATION: 1141+58.2500 AZM: N 71.274984 SKEW: -9.296944
 ENDING PIER: B4 STATION: 1141+94.2500 AZM: N 71.274984 SKEW: -9.296944

GIRDER	END POINT DISTANCES ALONG PIER CL			LENGTH		
	START	END	AZIMUTH	CL - CL	SEAT-SEAT	RADIUS
S3-G1	1.7383	3.0474	N 351.390720	36.0881	33.8026	INFINITY
S3-G2	8.5876	9.3741	N 350.571928	36.0000	33.7201	INFINITY
S3-G3	17.2008	17.9873	N 350.571928	36.0000	33.7201	INFINITY
S3-G4	25.8139	26.6004	N 350.571928	36.0000	33.7201	INFINITY
S3-G5	34.4270	35.2135	N 350.571928	36.0000	33.7201	INFINITY

***** End of Report *****

Hatch Mott MacDonald Phone: | Sheet 1 of 1
 Program: LEAP® GEOMATH® Ver: 08.01.00.01 (c) Bentley Systems, Inc | Job No:
 Phone: 800-778-4277 Web-Site: www.bentley.com | Date: 10/14/2009
 By:

Filename: N:\TRA\255717\Eng\BR37\Geomath\I-575 BR37.gmd

EXISTING

SPAN AND GIRDER REPORT

SPAN ID: E-B1RT-E-B2RT ROADWAY: E-575NB ALIGNMENT: 575align NUMBER OF GIRDERS: 2
 STARTING PIER: E-B1RT STATION: 1140+37.2500 AZM: N 71.274984 SKEW: -9.296944
 ENDING PIER: E-B2RT STATION: 1140+78.2500 AZM: N 71.274984 SKEW: -9.296944

GIRDER	END POINT DISTANCES ALONG PIER CL			LENGTH		
	START	END	AZIMUTH	CL - CL	SEAT-SEAT	RADIUS
E-S1-G1R	3.2054	1.2403	N 350.571928	41.0000	38.9734	INFINITY
E-S1-G6R	42.0489	40.0838	N 350.571928	41.0000	38.9734	INFINITY

***** End of Report *****

Existing plans
 38.974'

PJC 10-14-09

Hatch Mott MacDonald Phone: | Sheet 1 of 1
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Phone: 800-778-4277 Web-Site: www.bentley.com | By:

Filename: N:\TRA\255717\Eng\BR37\Geomath\I-575 BR37.gmd

EXISTING

SPAN AND GIRDER REPORT

SPAN ID: E-B2RT-E-B3RT ROADWAY: E-575NB ALIGNMENT: 575align NUMBER OF GIRDERS: 2
STARTING PIER: E-B2RT STATION: 1140+78.2500 AZM: N 71.274984 SKEW: -9.296944
ENDING PIER: E-B3RT STATION: 1141+58.2500 AZM: N 71.274984 SKEW: -9.296944

GIRDER	END POINT DISTANCES ALONG PIER CL			LENGTH		
	START	END	AZIMUTH	CL - CL	SEAT-SEAT	RADIUS
E-S2-G1R	1.2403	1.2403	N 350.571928	80.0000	78.4800	INFINITY
E-S2-G6R	40.0838	40.0838	N 350.571928	80.0000	78.4800	INFINITY

***** End of Report *****

Existing plane
78.48

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Phone:

| Sheet 1 of 1

| Job No:

Program: LEAP® GEOMATH® Ver: 08.01.00.01 (c) Bentley Systems, Inc | Date: 10/14/2009

Phone: 800-778-4277

Web-Site: www.bentley.com | By:

Filename: N:\TRA\255717\Eng\BR37\Geomath\I-575 BR37.gmd

EXISTING

SPAN AND GIRDER REPORT

SPAN ID: E-B3RT-E-B4RT ROADWAY: E-575NB ALIGNMENT: 575align NUMBER OF GIRDERS: 2
 STARTING PIER: E-B3RT STATION: 1141+58.2500 AZM: N 71.274984 SKEW: -9.296944
 ENDING PIER: E-B4RT STATION: 1141+94.2500 AZM: N 71.274984 SKEW: -9.296944

GIRDER	END POINT DISTANCES ALONG PIER CL			LENGTH		
	START	END	AZIMUTH	CL - CL	SEAT-SEAT	RADIUS
E-S3-G1R	1.2403	3.2054	N 350.571928	36.0000	33.9734	INFINITY
E-S3-G6R	40.0838	42.0489	N 350.571928	36.0000	33.9734	INFINITY

***** End of Report *****

Existing Plans
 33.974'

Hatch Mott MacDonald Phone: | Sheet 1 of 1
 Program: LEAP® GEOMATH® Ver: 08.01.00.01 (c) Bentley Systems, Inc | Job No:
 Phone: 800-778-4277 Web-Site: www.bentley.com | Date: 10/14/2009
 By:

Filename: N:\TRA\255717\Eng\BR37\Geomath\I-575 BR37.gmd

CLEARANCE REPORT

SPAN : B2-B3 SPAN ROADWAY: 575

CLEAR ROADWAY: BigSh

-----HORIZONTAL-----		
PIER ID	LT CLR	RT CLR
B2	14.46	14.04
B3	-13.45	-14.32

ID	MIN VERTICAL CLR	STATION	OFFSET	REF NODE NUMBER
S2-G1	17.02	249+62.5148	-24.00	10
S2-G2	16.94	249+69.4087	-24.00	10
S2-G3	16.84	249+77.8000	-24.00	10
S2-G4	16.74	249+86.1812	-24.00	10
S2-G5	16.64	249+94.5528	-24.00	10

Higher than existing 16.5'

ID	MAX VERTICAL CLR	STATION	OFFSET	REF NODE NUMBER
S2-G1	20.39	249+52.8993	24.00	9
S2-G2	20.30	249+60.8691	24.00	9
S2-G3	20.20	249+69.6842	24.00	9
S2-G4	20.09	249+78.4875	24.00	9
S2-G5	19.99	249+87.2798	24.00	9

LEFT EXTERIOR GIRDER ID: S2-G1
 RIGHT EXTERIOR GIRDER ID: S2-G5

-----LEFT EDGE OF DECK-----				-----RIGHT EDGE OF DECK-----			
STATION	OFFSET	ALONG	CLR	STATION	OFFSET	ALONG	CLR
1140+70.8295	-45.33	-1.30	-3.00	1140+78.2500	0.00	0.70	8.92
1141+10.9233	-44.76	38.80	-3.00	1141+18.2500	0.00	40.70	8.92
1141+51.0171	-44.18	78.90	-3.00	1141+58.2500	0.00	80.70	8.92
MINIMUM CLEARANCE:	LT	-3.00	RT	8.92			
MAXIMUM CLEARANCE:	LT	-3.00	RT	8.92			

***** End of Report *****

Feet Datafile Modification Date: 10/14/2009 08:35

Hatch Mott MacDonald

Phone:

| Sheet 1 of 1

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| Job No:

Program: LEAP® GEOMATH® Ver: 08.01.00.01 (c) Bentley Systems, Inc | Date: 10/14/2009

Phone: 800-778-4277

Web-Site: www.bentley.com | By:

Filename: N:\TRA\255717\Eng\BR37\Geomath\I-575 BR37-2.gmd

DECK ELEVATIONS ALONG OFFSETS (EQUAL SPACINGS)

SPAN ID: B1-B2 ROADWAY: 575 BETWEEN PIERS : B1 - B2 SPACES = 2

OFFSET	DISTANCE	STATION	OFFSET	ELEVATION
1 EOD	41.1003	1140+29.7334	-45.9167	966.2397
		1140+50.2814	-45.6231	966.4524
		1140+70.8295	-45.3294	966.6651
2 GUTTER	41.1003	1140+30.0000	-44.2879	966.2256
		1140+50.5481	-43.9942	966.4383
		1140+71.0961	-43.7006	966.6510
3	41.1003	1140+34.2662	-18.2269	965.9994
		1140+54.8143	-17.9333	966.2121
		1140+75.3624	-17.6396	966.4248
4	41.1003	1140+34.5944	-16.2222	965.9820
		1140+55.1425	-15.9286	966.1947
		1140+75.6905	-15.6349	966.4074
5 CUTLINE	41.0000 ✓	1140+36.5679	-4.1667	965.8773
		1140+57.0679	-4.1667	966.0925
		1140+77.5679	-4.1667	966.3078
6 PBL	41.0000	1140+37.2500	0.0000	965.8411
		1140+57.7500	0.0000	966.0564
		1140+78.2500	0.0000	966.2716

***** End of Report *****

Feet

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Hatch Mott MacDonald

Phone:

| Sheet 1 of 1

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| Job No:

Program: LEAP® GEOMATH® Ver: 08.01.00.01 (c) Bentley Systems, Inc | Date: 10/14/2009

Phone: 800-778-4277

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Filename: N:\TRA\255717\Eng\BR37\Geomath\I-575 BR37-2.gmd

DECK ELEVATIONS ALONG OFFSETS (EQUAL SPACINGS)

SPAN ID: B2-B3 ROADWAY: 575 BETWEEN PIERS : B2 - B3 SPACES = 2

OFFSET	DISTANCE	STATION	OFFSET	ELEVATION
1 EOD	80.1958	1140+70.8295	-45.3294	966.6651
		1141+10.9233	-44.7564	967.0802
		1141+51.0171	-44.1834	967.4952
2 GUTTER	80.1958	1140+71.0961	-43.7006	966.6510
		1141+11.1899	-43.1276	967.0660
		1141+51.2838	-42.5546	967.4810
3	80.1958	1140+75.3624	-17.6396	966.4248
		1141+15.4562	-17.0666	966.8398
		1141+55.5500	-16.4936	967.2548
4	80.1958	1140+75.6905	-15.6349	966.4074
		1141+15.7843	-15.0619	966.8224
		1141+55.8781	-14.4889	967.2374
5 CUTLINE	80.0000	1140+77.5679	-4.1667	966.3078
		1141+17.5679	-4.1667	966.7278
		1141+57.5679	-4.1667	967.1478
6 PBL	80.0000	1140+78.2500	0.0000	966.2716
		1141+18.2500	0.0000	966.6916
		1141+58.2500	0.0000	967.1116

***** End of Report *****

Feet

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Hatch Mott MacDonald

Phone:

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Filename: N:\TRA\255717\Eng\BR37\Geomath\I-575 BR37-2.gmd

DECK ELEVATIONS ALONG OFFSETS (EQUAL SPACINGS)

SPAN ID: B3-B4 ROADWAY: 575 BETWEEN PIERS : B3 - B4 SPACES = 2

OFFSET	DISTANCE	STATION	OFFSET	ELEVATION
1 <i>EOD</i>	36.0881	1141+51.0171 1141+69.0593 1141+87.1015	-44.1834 -43.9255 -43.6677	967.4952 967.6819 967.8687
2 <i>BUTTER</i>	36.0881	1141+51.2838 1141+69.3260 1141+87.3682	-42.5546 -42.2967 -42.0389	967.4810 967.6678 967.8546
3	36.0881	1141+55.5500 1141+73.5922 1141+91.6344	-16.4936 -16.2358 -15.9779	967.2548 967.4416 967.6283
4	36.0881	1141+55.8781 1141+73.9204 1141+91.9626	-14.4889 -14.2311 -13.9732	967.2374 967.4242 967.6109
5 <i>CUTLINE</i>	36.0000	1141+57.5679 1141+75.5679 1141+93.5679	-4.1667 -4.1667 -4.1667	967.1478 967.3368 967.5258
6 <i>P6L</i>	36.0000	1141+58.2500 1141+76.2500 1141+94.2500	0.0000 0.0000 0.0000	967.1116 967.3006 967.4896

***** End of Report *****

Feet

Datafile Modification Date: 10/14/2009 13:09

CALCULATION COVER SHEET

PROJECT	JOB NO.	CALC NO.	SHEET
I-75 / I-575 NORTHWEST CORRIDOR	NH000-0575-01(028)	BR#37	1
SUBJECT	DISCIPLINE		
Slab Design	STRUCTURAL		

CALCULATION STATUS DESIGNATION	PRELIMINARY	CONFIRMED	SUPSEDED	VOIDED	INCOMPLETE
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

COMPUTER PROGRAM/TYPE	SCP	MAINFRAME	PC	PROGRAM	VERSION/RELEASE NO.
	<input checked="" type="radio"/> YES <input type="radio"/> NO	<input type="radio"/>	<input checked="" type="radio"/>	Excel	2003

Note 1: Georgia Department of Transportation (GDOT) terminated Contract Number TOURDPI60072 for its convenience prior to the completion of all work under that contract and directed that the work with respect to these calculations be discontinued.

(a) These calculations were not completed at the time of GDOT's direction and the information contained herein is not complete and/or has not been fully verified or checked. These calculations are a work-in-progress and are presented only as such.

(b) Any user is cautioned that the use of these calculations and any related information or calculations, without access to factors and without proper regard for their purpose, could lead to erroneous conclusions.

(c) If any such calculations or any information contained herein is used in future work efforts or any follow on design work activity, a complete confirmation of the information contained herein should be performed prior to any such use.

(d) GTP has no responsibility for the use of this information not under its direct control.

Slab Design calculations are included for spans 1&3, and span 2.

A	As per GDOT's termination for convenience direction	10	10	JCR			11/30/09
NO.	REASON FOR REVISION	TOTAL NO. OF SHEETS	LAST SHEET NO.	BY	CHECKED	APPROVED/ ACCEPTED	DATE
RECORD OF REVISIONS							

CALCULATION SHEET

PROJECT: I-75 / I-575 NORTHWEST CORRIDOR

JOB NUMBER NH000-0575-01(028)

CALC NO. BR#37

SUBJECT: Slab Design

BY: JCR

DATE: 11/30/2009

SHEET NO.

SHEET REV.

Sufficient sample calculations representative of the scope and conditions in the design calculation were performed and the results compared to demonstrate the computer program adequacy.

BRIDGE: I-575 over Big Shanty Road
COUNTY: CHEROKEE
P.I. NO: 713640
PROJECT: NH000-0575-01(028)

J.B. TRIMBLE, INC.



SPAN 1 & 3

JOB NO: 31-6036
DESIGNED BY: SHG
DATE: 10/18/2009

PRELIMINARY INFORMATION

INTERMEDIATE SLAB THICKNESS = 8.500 IN
OVERHANG SLAB THICKNESS = 8.500 IN
GIRDER SPACING = 8.500 FT
NUMBER OF GIRDERS = 6
OVERHANG WIDTH = 3.000 FT
TOP FLANGE WIDTH = 10.500 IN
CONCRETE STRENGTH, f_c = 3500 PSI
STEEL STRENGTH, f_y = 60000 PSI
PARAPET HEIGHT = 2.667 FT
PARAPET WIDTH = 1.625 FT
PARAPET AREA = 2.700 SF
C.G. FROM OUTSIDE = 0.667 FT
TOP BAR CLEARANCE = 2.750 IN
BOTTOM BAR CLEARANCE = 1.000 IN
GROOVED DEPTH = 0.250 IN
DESIGN SPEED = 50.00 MPH (IF CENTRIFUGAL CONSIDERED)
RADIUS = 0.00 FT (IF CENTRIFUGAL CONSIDERED)
WHEEL LOAD = 16.00 KIPS HS20
IMPACT FACTOR = 1.30
ADDITIONAL LOAD = 30.00 PSF
RAILING LOAD = 10.00 KIP AT TOP OF PARAPET

BAR DETAILS		
SIZE	AREA	WEIGHT
Not Needed	0	0
No. 3	0.11	0.376
No. 4	0.20	0.668
No. 5	0.31	1.043
No. 6	0.44	1.502
No. 7	0.60	2.044
No. 8	0.79	2.670
No. 9	1.00	3.400
No. 10	1.27	4.300
No. 11	1.56	5.310
No. 14	2.25	7.650
No. 18	4.00	13.600

INTERMEDIATE SLAB DESIGN

BEAM TYPE: STEEL (TB, STEEL, PSC, BULB-T)

EFFECTIVE SPAN LENGTH = 8.063 FT

AASHTO 3.24.1.2

DEAD LOAD

SLAB D.L. = 0.106 KIP/FT/LF
ADDITIONAL D.L. = 0.030 KIP/FT/LF
TOTAL D.L. = 0.136 KIP / FT / LF

DEAD LOAD MOMENT = $1.3 \cdot (WT \cdot DL) \cdot (SPAN)^2 / 10 = 1.152$ KIP-FT / LF

LIVE LOAD

WHEEL LOAD = 16.00 KIPS
CONT. FACTOR = 0.80
IMPACT = 1.30

LIVE LOAD MOMENT = $2.17 \cdot ((S + 2)/32) \cdot P \cdot (LL + I) \cdot 0.8 = 11.355$ KIP-FT / LF

AASHTO 3.24.3.1

CENTRIFUGAL LOAD

$C = 6.68 \cdot S^2 / R = 0.000$ FRACTION OF LIVE LOAD

AASHTO 3.10.1

CENTRIFUGAL FORCE MOMENT = $1.3 \cdot ((S + 2)/32) \cdot P \cdot (LL + I) \cdot 0.8 \cdot C = 0.000$ KIP-FT / LF

AASHTO TABLE 3.22.1A

TOTAL DESIGN MOMENT (ϕM_u) = 12.507 KIP-FT / LF = 150.08 K-IN / LF

FLEXURE STRENGTH

AASHTO 8.16.3.2

$\phi M_n > M_u$ $\phi = 0.90$

$\phi M_n = \phi \cdot [A_s \cdot f_y \cdot (d - a/2)]$ where $a = A_s \cdot f_y / [0.85 \cdot f_c \cdot b]$

$a = 1.681$ As
 $d_{top} = 5.438$ IN USE 5 BAR As = 0.31 IN² / LF
 $d_{bot} = 6.938$ IN USE 5 BAR As = 0.31 IN² / LF

TOP STEEL

293.625 As = 45.38 As² = 150.08 K-IN / LF

TOP BAR = NO. 5 SPACED AT 5.750 IN As = 0.65 IN² / LF

$\phi M_n = 170.97$ K-IN / LF $\geq \phi M_u = 150.08$ K-IN / LF OK

BOTTOM STEEL

374.625 As = 45.38 As² = 150.08 K-IN / LF

BOT BAR = NO. 5 SPACED AT 5.750 IN As = 0.65 IN² / LF

$\phi M_n = 223.37$ K-IN / LF $\geq \phi M_u = 150.08$ K-IN / LF OK

BRIDGE: I-575 over Big Shanty Road
COUNTY: CHEROKEE
P.I. NO: 713540
PROJECT: NH000-0575-01(028)

J.B. TRIMBLE, INC.



SPAN 1 & 3

JOB NO: 31-6036
DESIGNED BY: SHG
DATE: 10/18/2009

OVERHANG SLAB DESIGN

EFFECTIVE SPAN LENGTH = 2.563 FT

AASHTO 3.24.5.1

DEAD LOAD

SLAB D.L. = 0.106 KIP/FT/LF
ADDITIONAL D.L. = 0.030 KIP/FT/LF
PARAPET D.L. = 0.405 KIP/FT/LF

DL MOMENT @ FLANGE:

SLAB MOM = 0.349 KIP-FT/LF
ADD'L MOM = 0.013 KIP-FT/LF
PARAPET MOM = 0.758 KIP-FT/LF

TOTAL MOM = 1.130 KIP-FT/LF

DL MOMENT @ EDGE OF BARRIER:

SLAB MOM = 0.140 KIP-FT/LF
ADD'L MOM = 0.000 KIP-FT/LF
PARAPET MOM = 0.388 KIP-FT/LF

TOTAL MOM = 0.528 KIP-FT/LF

DEAD LOAD MOMENT @ FLANGE = 1.3 * TOTAL MOMENT = 1.469 KIP-FT / LF
D.L. MOMENT @ EDGE OF BARRIER = 1.3 * TOTAL MOMENT = 0.687 KIP-FT / LF

LIVE LOAD

WHEEL LOAD = 16.00 KIPS

IMPACT = 1.30
MOM ARM (X) = 0.38 FT
E = 0.8 * X + 3.75 = 4.05 FT

LIVE LOAD MOMENT = 2.17 * (P(LL + I) / E) * X = 4.179 KIP-FT / LF

AASHTO 3.24.5.1.1

CENTRIFUGAL LOAD

C = 6.66 * S^2 / R = 0.000 FRACTION OF LIVE LOAD

CENTRIFUGAL FORCE MOMENT = 1.3 * (P(LL + I) / E) * X * C = 0.000 KIP-FT / LF

RAILING LOAD

RAILING LOAD = 10.00 KIPS

RAILING LOAD @ FLANGE:

MOM ARM (H) = 3.139 FT
DISTANCE (X) = 1.90 FT
E = 0.8 * X + 5.00 = 6.52 FT

RAILING LOAD @ EDGE OF BARRIER:

MOM ARM (H) = 3.14 FT
DISTANCE (X) = 0.96 FT
E = 0.8 * X + 5.00 = 5.77 FT

RAIL MOM @ FLANGE = 2.17 * (P_{rail} / E) * H = 10.452 KIP-FT / LF

RAIL MOM @ EDGE OF BARRIER = 2.17 * (P_{rail} / E) * H = 11.812 KIP-FT / LF

AASHTO 3.24.5.2

SUMMARY OF MOMENTS:

DL + LL @ FLANGE = 5.648 KIP-FT / LF
DL + RAIL @ FLANGE = 11.921 KIP-FT / LF
DL + RAIL @ BARRIER = 12.499 KIP-FT / LF

TOTAL DESIGN MOMENT (Φ M_u) = 12.499 KIP-FT / LF

FLEXURE STRENGTH

AASHTO 8.16.3.2

Φ M_n > M_u Φ = 0.90

Φ M_n = Φ * [A_s * f_y * (d - a/2)] where a = A_s * f_y / [0.85 * f_c * b]

a = 1.681 As
d_{top} = 5.438 IN USE 5 BAR As = 0.31 IN² / LF

TOP STEEL

293.625 As - 45.36 As² = 149.98 K-IN / LF

TOP BAR = NO. 5 SPACED AT 5.750 IN As = 0.65 IN² / LF

Φ M_n = 170.97 K-IN / LF ≥ Φ M_u = 149.98 K-IN / LF OK

BRIDGE: I-575 over Big Shanty Road
COUNTY: CHEROKEE
P.L. NO: 713640
PROJECT: NH000-0575-01(028)

J.B. TRIMBLE, INC.



SPAN 2

JOB NO: 31-6036
DESIGNED BY: SHG
DATE: 10/15/2009

PRELIMINARY INFORMATION

INTERMEDIATE SLAB THICKNESS = 8.500 IN
OVERHANG SLAB THICKNESS = 8.500 IN
GIRDER SPACING = 8.500 FT
NUMBER OF GIRDERS = 6
OVERHANG WIDTH = 3.000 FT
TOP FLANGE WIDTH = 12.000 IN
CONCRETE STRENGTH, f_c = 3500 PSI
STEEL STRENGTH, f_y = 60000 PSI
PARAPET HEIGHT = 2.667 FT
PARAPET WIDTH = 1.625 FT
PARAPET AREA = 2.700 SF
C.G. FROM OUTSIDE = 0.667 FT
TOP BAR CLEARANCE = 2.750 IN
BOTTOM BAR CLEARANCE = 1.000 IN
GROOVED DEPTH = 0.250 IN
DESIGN SPEED = 50.00 MPH (IF CENTRIFUGAL CONSIDERED)
RADIUS = 0.00 FT (IF CENTRIFUGAL CONSIDERED)
WHEEL LOAD = 16.00 KIPS HS20
IMPACT FACTOR = 1.30
ADDITIONAL LOAD = 30.00 PSF
RAILING LOAD = 10.00 KIP AT TOP OF PARAPET

BAR DETAILS		
SIZE	AREA	WEIGHT
Not Needed	0	0
No. 3	0.11	0.376
No. 4	0.20	0.668
No. 5	0.31	1.043
No. 6	0.44	1.502
No. 7	0.60	2.044
No. 8	0.79	2.670
No. 9	1.00	3.400
No. 10	1.27	4.300
No. 11	1.56	5.310
No. 14	2.25	7.650
No. 18	4.00	13.600

INTERMEDIATE SLAB DESIGN

BEAM TYPE: STEEL (TB, STEEL, PSC, BULB-T)

EFFECTIVE SPAN LENGTH = 8.000 FT

AASHTO 3.24.1.2

DEAD LOAD

SLAB D.L. = 0.106 KIP/FT/LF
ADDITIONAL D.L. = 0.030 KIP/FT/LF
TOTAL D.L. = 0.136 KIP / FT / LF

$$\text{DEAD LOAD MOMENT} = 1.3 \cdot (\text{WT DL}) \cdot (\text{SPAN})^2 / 10 = 1.134 \text{ KIP-FT / LF}$$

LIVE LOAD

WHEEL LOAD = 16.00 KIPS
CONT. FACTOR = 0.80
IMPACT = 1.30

$$\text{LIVE LOAD MOMENT} = 2.17 \cdot ((S + 2)/32) \cdot P \cdot (LL + I) \cdot 0.8 = 11.284 \text{ KIP-FT / LF}$$

AASHTO 3.24.3.1

CENTRIFUGAL LOAD

$$C = 6.68 \cdot S^2 / R = 0.000 \text{ FRACTION OF LIVE LOAD}$$

AASHTO 3.10.1

$$\text{CENTRIFUGAL FORCE MOMENT} = 1.3 \cdot ((S + 2)/32) \cdot P \cdot (LL + I) \cdot 0.8 \cdot C = 0.000 \text{ KIP-FT / LF}$$

AASHTO TABLE 3.22.1A

$$\text{TOTAL DESIGN MOMENT } (\phi M_u) = 12.418 \text{ KIP-FT / LF} = 149.01 \text{ K-IN / LF}$$

FLEXURE STRENGTH

AASHTO 8.16.3.2

$$\phi M_n > M_u \quad \phi = 0.90$$

$$\phi M_n = \phi \cdot [A_s \cdot f_y \cdot (d - a/2)] \quad \text{where } a = A_s \cdot f_y / (0.85 \cdot f_c \cdot b)$$

$a = 1.681$ As
 $d_{top} = 5.438$ IN USE 5 BAR As = 0.31 IN² / LF
 $d_{bot} = 6.938$ IN USE 5 BAR As = 0.31 IN² / LF

TOP STEEL

$$293.625 \text{ As} - 45.38 \text{ As}^2 = 149.01 \text{ K-IN / LF}$$

TOP BAR = NO. 5 SPACED AT 5.875 IN As = 0.63 IN² / LF

$$\phi M_n = 167.73 \text{ K-IN / LF} \geq \phi M_u = 149.01 \text{ K-IN / LF} \quad \text{OK}$$

BOTTOM STEEL

$$374.625 \text{ As} - 45.38 \text{ As}^2 = 149.01 \text{ K-IN / LF}$$

BOT BAR = NO. 5 SPACED AT 5.875 IN As = 0.63 IN² / LF

$$\phi M_n = 219.02 \text{ K-IN / LF} \geq \phi M_u = 149.01 \text{ K-IN / LF} \quad \text{OK}$$

BRIDGE: I-575 over Big Shanty Road
COUNTY: CHEROKEE
P.L. NO: 713640
PROJECT: NH000-0575-01(028)

J.B. TRIMBLE, INC.



SPAN 2

JOB NO: 31-6036
DESIGNED BY: SHG
DATE: 10/15/2009

OVERHANG SLAB DESIGN

EFFECTIVE SPAN LENGTH = 2.500 FT

AASHTO 3.24.5.1

DEAD LOAD

SLAB D.L. = 0.106 KIP/FT/LF
ADDITIONAL D.L. = 0.030 KIP/FT/LF
PARAPET D.L. = 0.405 KIP/FT/LF

DL MOMENT @ FLANGE:

SLAB MOM = 0.332 KIP-FT/LF
ADD'L MOM = 0.011 KIP-FT/LF
PARAPET MOM = 0.743 KIP-FT/LF

TOTAL MOM = 1.086 KIP-FT/LF

DL MOMENT @ EDGE OF BARRIER:

SLAB MOM = 0.140 KIP-FT/LF
ADD'L MOM = 0.000 KIP-FT/LF
PARAPET MOM = 0.388 KIP-FT/LF

TOTAL MOM = 0.528 KIP-FT/LF

DEAD LOAD MOMENT @ FLANGE = 1.3 * TOTAL MOMENT = 1.412 KIP-FT / LF
D.L. MOMENT @ EDGE OF BARRIER = 1.3 * TOTAL MOMENT = 0.687 KIP-FT / LF

LIVE LOAD

WHEEL LOAD = 16.00 KIPS

IMPACT = 1.30
MOM ARM (X) = 0.38 FT
E = 0.8 * X + 3.75 = 4.05 FT

LIVE LOAD MOMENT = $2.17 * (P_{LL} + I) / E * X = 4.179$ KIP-FT / LF

AASHTO 3.24.5.1

CENTRIFUGAL LOAD

C = $6.68 * S^2 / R = 0.000$ FRACTION OF LIVE LOAD

CENTRIFUGAL FORCE MOMENT = $1.3 * (P_{LL} + I) / E * X * C = 0.000$ KIP-FT / LF

RAILING LOAD

RAILING LOAD = 10.00 KIPS

RAILING LOAD @ FLANGE:

MOM ARM (H) = 3.139 FT
DISTANCE (X) = 1.83 FT
E = 0.8 * X + 5.00 = 6.47 FT

RAILING LOAD @ EDGE OF BARRIER:

MOM ARM (H) = 3.14 FT
DISTANCE (X) = 0.96 FT
E = 0.8 * X + 5.00 = 5.77 FT

RAIL MOM @ FLANGE = $2.17 * (P_{rail} / E) * H = 10.533$ KIP-FT / LF

RAIL MOM @ EDGE OF BARRIER = $2.17 * (P_{rail} / E) * H = 11.812$ KIP-FT / LF

AASHTO 3.24.5.2

SUMMARY OF MOMENTS:

DL + LL @ FLANGE = 5.591 KIP-FT / LF
DL + RAIL @ FLANGE = 11.945 KIP-FT / LF
DL + RAIL @ BARRIER = 12.499 KIP-FT / LF

TOTAL DESIGN MOMENT (ϕM_u) = 12.499 KIP-FT / LF

FLEXURE STRENGTH

$\phi M_n > M_u$ $\phi = 0.90$

AASHTO 8.16.3.2

$\phi M_n = \phi * [A_s * f_y * (d - a/2)]$ where $a = A_s * f_y / [0.85 * f'_c * b]$

a = 1.681 As
d_{top} = 5.438 IN

USE 5 BAR

As = 0.31 IN² / LF

TOP STEEL

293.625 As = 45.38 As² = 149.98 K-IN / LF

TOP BAR = NO. 5 SPACED AT 5.875 IN As = 0.63 IN² / LF

$\phi M_n = 167.73$ K-IN / LF $\geq \phi M_u = 149.98$ K-IN / LF OK

SERVICE LOAD DESIGN OF BRIDGE SLAB

Georgia Department of Transportation
Office of Bridge and Structural Design
October 2003

13-MAY-04
07:49:26

WHEEL LOAD (Kips)	fc (ksi)	fs (ksi)	n	SLAB COVER (in)	FUTURE PAVING (kips/ft ²)	CONTINUITY FACTOR
16.00	1.400	24.000	9	2.750	0.030	0.8
EFFECTIVE SPAN LENGTH (ft-in)	SLAB THICKNESS MINIMUM ACTUAL (in) (in)	SIZE AND SPACING OF MAIN REINFORCEMENT (in)	DISTRUBUTION REINFORCEMENT MIDDLE HALF	OUTER QUARTERS		
6 - 6	7.8889 8.000	# 5 at 6.500	7 -# 4	4 -# 4		
6 - 7	7.9167 8.000	# 5 at 6.375	7 -# 4	4 -# 4		
6 - 8	7.9445 8.000	# 5 at 6.375	7 -# 4	4 -# 4		
6 - 9	7.9722 8.000	# 5 at 6.250	7 -# 4	4 -# 4		
6 - 10	7.9998 8.000	# 5 at 6.250	7 -# 4	4 -# 4		
6 - 11	8.0309 8.125	# 5 at 6.250	7 -# 4	4 -# 4		
7 - 0	8.0585 8.125	# 5 at 6.250	7 -# 4	4 -# 4		
7 - 1	8.0860 8.125	# 5 at 6.125	8 -# 4	4 -# 4		
7 - 2	8.1134 8.125	# 5 at 6.125	8 -# 4	4 -# 4		
7 - 3	8.1446 8.250	# 5 at 6.125	8 -# 4	4 -# 4		
7 - 4	8.1719 8.250	# 5 at 6.125	8 -# 4	4 -# 4		
7 - 5	8.1992 8.250	# 5 at 6.000	8 -# 4	4 -# 4		
7 - 6	8.2265 8.250	# 5 at 6.000	8 -# 4	4 -# 4		
7 - 7	8.2577 8.375	# 5 at 6.000	8 -# 4	4 -# 4		
7 - 8	8.2849 8.375	# 5 at 6.000	8 -# 4	4 -# 4		
7 - 9	8.3121 8.375	# 5 at 5.875	9 -# 4	6 -# 4		
7 - 10	8.3392 8.375	# 5 at 5.875	9 -# 4	6 -# 4		
7 - 11	8.3662 8.375	# 5 at 5.750	9 -# 4	6 -# 4		
8 - 0	8.3976 8.500	# 5 at 5.875	9 -# 4	6 -# 4		
8 - 1	8.4246 8.500	# 5 at 5.750	9 -# 4	6 -# 4		
8 - 2	8.4515 8.500	# 5 at 5.750	9 -# 4	6 -# 4		
8 - 3	8.4784 8.500	# 5 at 5.625	9 -# 4	6 -# 4		
8 - 4	8.5099 8.625	# 5 at 5.750	9 -# 4	6 -# 4		
8 - 5	8.5367 8.625	# 5 at 5.625	10 -# 4	6 -# 4		
8 - 6	8.5636 8.625	# 5 at 5.625	10 -# 4	6 -# 4		
8 - 7	8.5903 8.625	# 5 at 5.500	10 -# 4	6 -# 4		
8 - 8	8.6170 8.625	# 5 at 5.500	10 -# 4	6 -# 4		
8 - 9	8.6487 8.750	# 5 at 5.625	10 -# 4	6 -# 4		
8 - 10	8.6754 8.750	# 5 at 5.500	10 -# 4	6 -# 4		
8 - 11	8.7020 8.750	# 5 at 5.500	11 -# 4	6 -# 4		
9 - 0	8.7286 8.750	# 5 at 5.375	11 -# 4	6 -# 4		
9 - 1	8.7605 8.875	# 5 at 5.500	11 -# 4	6 -# 4		
9 - 2	8.7871 8.875	# 5 at 5.375	11 -# 4	6 -# 4		
9 - 3	8.8136 8.875	# 5 at 5.375	11 -# 4	6 -# 4		
9 - 4	8.8401 8.875	# 5 at 5.375	11 -# 4	6 -# 4		
9 - 5	8.8665 8.875	# 5 at 5.250	12 -# 4	6 -# 4		

para 1
8'-6"
-1'-0"
12x(12"/4)
8'-0"

SECTION IV – CONCRETE AND REINFORCING STEEL

BRIDGE DECK DESIGN

No. 4.01

When designing bridge decks, the following criteria shall be applied:

For cast-in-place decks north of the fall line:

1. Specify Class AA concrete except for post-tensioned concrete boxes which shall have Class AA as a minimum, but may require a higher 28-day strength.
2. **Specify 2 ¾" (70 mm) cover to top bar reinforcement for bridge decks on interstate routes, state routes and routes with design year ADT equal to or greater than 2000.**
3. Specify 2 ½" (65 mm) cover to top bar reinforcement for bridge decks on all other routes.

For cast-in-place decks south of the fall line:

1. Specify Class AA concrete except for post-tensioned concrete boxes which shall have Class AA as a minimum, but may require a higher 28-day strength.
2. Specify 2 ¼" (60 mm) cover to top bar reinforcement for bridge decks on interstate routes, state routes and routes with design year ADT equal to or greater than 2000.
3. Specify 2" (50 mm) cover to top bar reinforcement for bridge decks on all other routes.

For bridge decks of precast concrete elements, specify 2" cover to top bar reinforcement statewide.

Note that ¼" of concrete thickness may be planed off of the top of cast-in-place decks on interstate routes, state routes and routes with design year ADT equal to or greater than 2000. Therefore, reduce slab thickness accordingly for strength calculations of composite slabs on steel or PSC beams and post-tensioned boxes.

Deck slabs shall be designed by the Service Load method with $f_c = 1400$ psi (10 MPa), as a rule.

The minimum 28 day strength (f'_c) for the deck concrete shall be 3500 psi (25 MPa). Slabs shall be designed so that the main slab reinforcement is the same in the bottom of the slab as in the top. To achieve this, the effective depth shall be taken as the distance from the bottom of the slab to the centroid of the top main reinforcing steel for both positive and negative moment. Positive and negative moments shall be assumed to be equal and shall be calculated in accordance with the AASHTO Specifications.

See Fig. 4-01 for a location map of the fall line for Georgia.

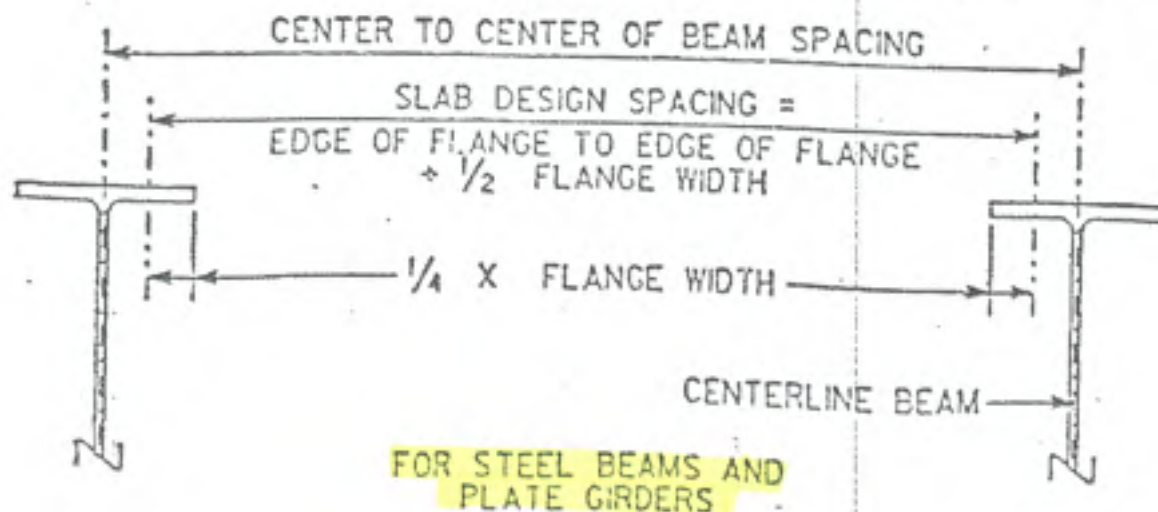
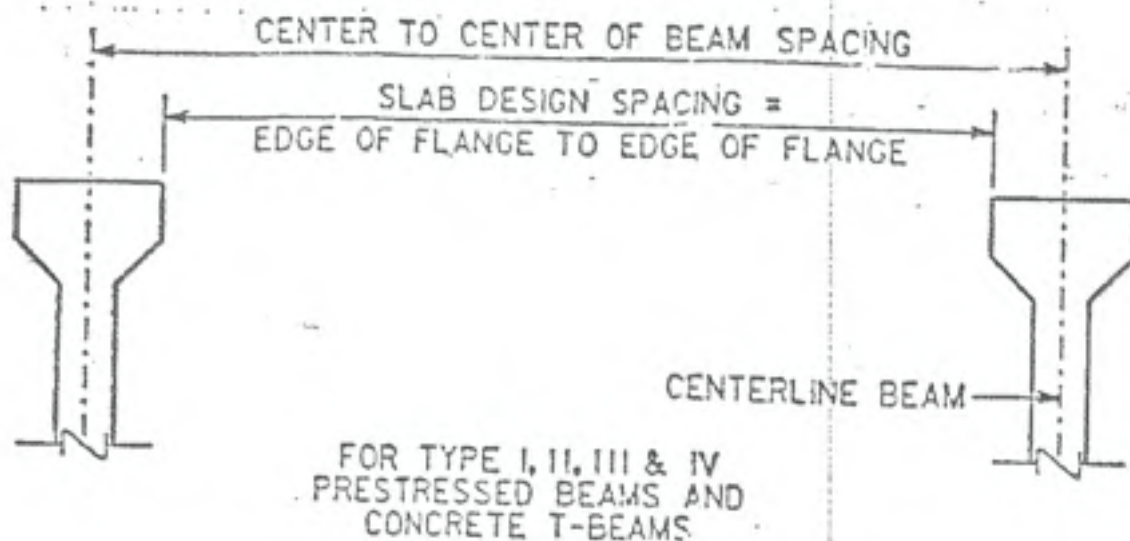
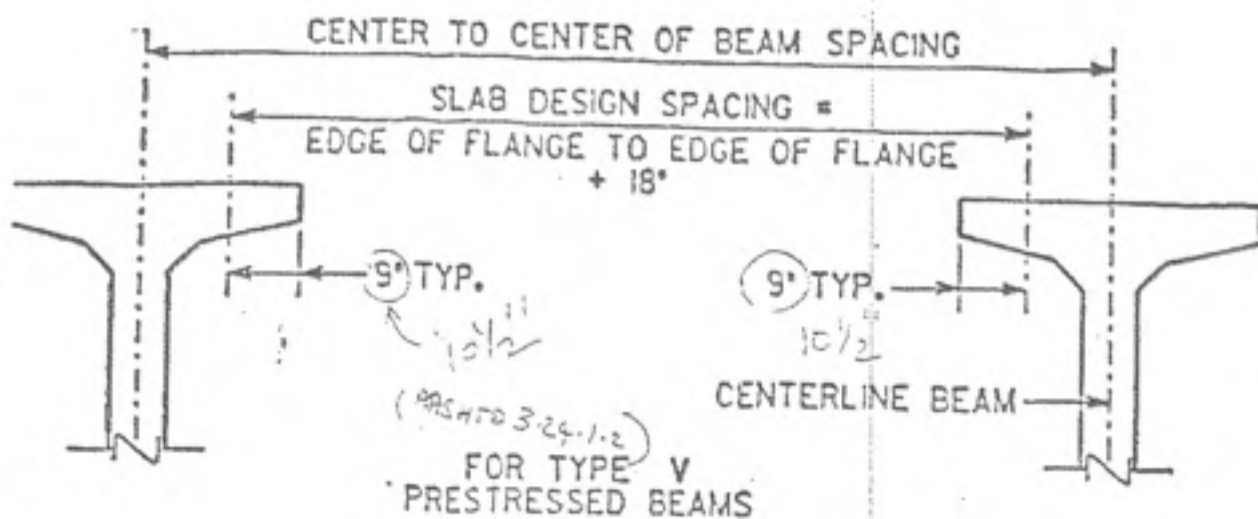


FIG. NO. 1 (cont'd)

CALCULATION COVER SHEET

PROJECT	JOB NO.	CALC NO.	SHEET
I-75 / I-575 NORTHWEST CORRIDOR	NH000-0575-01(028)	BR#37	1
SUBJECT	DISCIPLINE		
Beam Design Input	STRUCTURAL		

CALCULATION STATUS DESIGNATION	PRELIMINARY	CONFIRMED	SUPSEDED	VOIDED	INCOMPLETE
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

COMPUTER PROGRAM/TYPE	SCP	MAINFRAME	PC	PROGRAM	VERSION/RELEASE NO.
	<input checked="" type="radio"/> YES <input type="radio"/> NO	<input type="radio"/>	<input checked="" type="radio"/>	Excel	2003

Note 1: Georgia Department of Transportation (GDOT) terminated Contract Number TOURDPP160072 for its convenience prior to the completion of all work under that contract and directed that the work with respect to these calculations be discontinued.

(a) These calculations were not completed at the time of GDOT's direction and the information contained herein is not complete and/or has not been fully verified or checked. These calculations are a work-in-progress and are presented only as such.

(b) Any user is cautioned that the use of these calculations and any related information or calculations, without access to factors and without proper regard for their purpose, could lead to erroneous conclusions.

(c) If any such calculations or any information contained herein is used in future work efforts or any follow on design work activity, a complete confirmation of the information contained herein should be performed prior to any such use.

(d) GTP has no responsibility for the use of this information not under its direct control.

Beam Design Input calculations are included for spans 1, 2 and 3.

A	As per GDOT's termination for convenience direction	7	7	JCR			11/30/09
NO.	REASON FOR REVISION	TOTAL NO. OF SHEETS	LAST SHEET NO.	BY	CHECKED	APPROVED/ ACCEPTED	DATE
RECORD OF REVISIONS							

CALCULATION SHEET

PROJECT: I-75 / I-575 NORTHWEST CORRIDOR
JOB NUMBER NH000-0575-01(028)
CALC NO. BR#37

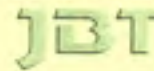
SUBJECT: Beam Design Input - Span 1
BY: JCR DATE: 11/30/2009

SHEET NO.
SHEET REV.

Sufficient sample calculations representative of the scope and conditions in the design calculation were performed and the results compared to demonstrate the computer program adequacy.

BRIDGE: I-575 over Big Shanty Road
COUNTY: CHEROKEE
P.L. NO: 713640
PROJECT: NH000-0575-01(028)

J.B. TRIMBLE, INC.



JOB NO: 31-6036
DESIGNED BY: SHG
DATE: 10/18/2009

SPAN 1

Beam Type

D' DIMENSION = 9.25 IN
MIN. COPING DEPTH = 0.375 IN

AASHTO 8.10.1.1 - Compression Flange Width

WBM FLANGE = 10.50 IN
b = 8m Spacing = 102.00 IN CONTROLS
b = 1/4 Span Length = 117.00 IN
b = WBM FLANGE + 2(8 [SLAB]) = 109.50 IN

BRIDGE GEOMETRY INPUT:

LARGER BEAM SPACING 8.500 FT
SMALLER BEAM SPACING 8.500 FT
SKEW ANGLE 80.70 DEGREES

SLAB:

D' DIMENSION 9.25 IN
DESIGN SLAB DEPTH 8.250 IN
COPING WIDTH 0.875 FT
COPING DEPTH 0.6875 IN
SLAB & COPING WEIGHT 0.884 KIP/FT
SIP FORMWORK 0.122 KIP/FT

DECK OVERLAY

AVERAGE THICKNESS 0.250 IN
DECK OVERLAY WEIGHT 0.027 KIP/FT
ROADWAY WIDTH 40.000 FT
FUTURE WEARING SURFACE 0.240 KIP/FT

UTILITIES

GAS MAIN (not added to W_{DL}) 0.00 KIP/FT
TELEPHONE CONDUITS (not added to W_{DL}) 0.00 KIP/FT
WATER MAIN 0.00 KIP/FT

EDGE BEAM:

DEPTH (from top of slab) 2.02 FT
WIDTH 1.000 FT
EDGE BM. WEIGHT 1.723 KIP

DIAPHRAGM:

Plate (3/8" X 5" X 2'-6") 0.017 KIP
CHANNEL (MC 18" X 42.7") 0.043 KIP/FT
DIAPH. WEIGHT 0.395 KIP

END WALL:

DEPTH (from top of slab) 3.492 FT
WIDTH 0.667 FT
PAVING NOTCH WIDTH 0.667 FT
AVG. PAVING NOTCH DEPTH 0.620 FT
END WALL WEIGHT 3.135 KIP

PARAPET:

SW, PAR., FENCE, & MEDIAN WEIGHT 1.900 KIP/FT
NUMBER OF BEAMS 5
PARAPET WEIGHT 0.380 KIP/FT

SIDEWALK LIVE LOAD:

SIDEWALK WIDTH 0 FT
SIDEWALK LOAD 0.060 KIP/FT²
NUMBER OF BEAMS 5
SIDEWALK LIVE LOAD PER BEAM 0.000 KIP/FT

DEAD LOAD CALCULATION:

SPAN LENGTH 39.00 FT
BEAM WEIGHT 0.099 KLF
TOTAL DL 1.752 KIP/LF
REACTION (K) 34.157
MOMENT (K-FT) 333.031

P-LOADS:

TYPE	LOAD (K)	POSITION (FT)	REACTION (K)	MOMENT (K-FT)
END WALL:	3.135	0.00	3.135	0.000
DIAPHRAGM:	0.395	19.50	0.198	3.852
EDGE BEAM:	1.723	39.00	0.000	0.000

	REACTION (K)	MOMENT (K-FT)
TOTAL DL :	37.5	336.9

LIVE LOAD CALCULATION:

BEAM DISTRIBUTION

	MOMENT	WHEEL	VERIFY !!
	1.545		
	0.773	AXLE	
	1.824	WHEEL	VERIFY !!
	0.912	AXLE	

IMPACT FACTOR

1.300
HS 20 LOADING: MDSPAN 422 KIP-FT
MAX 432.1 KIP-FT

HS 20 REACTION:

	TRUCK	LANE	R x DF x I	REACTION (K)	MOMENT (K-FT)
	54.77	KIP	60.80	43.35	423.9
	30.48	KIP			434.0

	REACTION (K)	MOMENT (K-FT)
TOTAL LL + I :	60.8	423.9
MAX TOTAL LL + I :		434.0

	REACTION (K)	MOMENT (K-FT)
TOTAL D.L. + L.L. :	98.3	760.8

DEFLECTIONS CALCULATION:

NO. LANES 3
NO. BEAMS 5
REDUCTION FACTOR 0.90
FACTOR 1.080

SIMPLE SPAN PROGRAM INPUT:

LENGTH = 39.00 FT
Moment Dist. Factor (DFM) = 1.545
End Shear Dist. Factor (DFV) = 1.824
LL Deflection Dist. Factor (DFD) = 1.080
Non-Composite DL (W_{DLNC}) = 1.033 KLF
Composite DL (W_{DLC}) = 0.620 KLF W/F.W.S.
Sidewalk LL (W_{LLS}) = 0.000 KLF
Effective Concrete Width (W_e) = 102.000 IN
Concrete Slab Thickness (T_s) = 8.250 IN
Minimum Coping (DF) = 0.750 IN

P-LOADS:

XP1 0.00 FT
P1 3.135 K
XP2 19.500 FT
P2 0.395 K
XP3 39.000 FT
P3 1.723 K

CALCULATION SHEET

PROJECT: I-75 / I-575 NORTHWEST CORRIDOR
JOB NUMBER NH000-0575-01(028)
CALC NO. BR#37

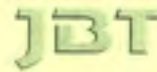
SUBJECT: Beam Design Input - Span 2
BY: JCR DATE: 11/30/2009

SHEET NO.
SHEET REV.

Sufficient sample calculations representative of the scope and conditions in the design calculation were performed and the results compared to demonstrate the computer program adequacy.

BRIDGE: I-575 over Big Shanty Road
COUNTY: CHEROKEE
P.I. NO: 713640
PROJECT: NH000-0575-01(028)

J.B. TRIMBLE, INC.



JOB NO: 31-6036
DESIGNED BY: SHG
DATE: 10/23/2009

SPAN 2

Beam Type Plate Girders

D' DIMENSION = 9.625 IN
MIN. COPING DEPTH = 0.375 IN

AASHTO 8.10.1.1 - Compression Flange Width

WBM FLANGE = 12.00 in.
b = 8m Spacing = 102.00 in. CONTROLS
b = 1/4 Span Length = 235.50 in.
b = WBM FLANGE + 2(S SLAB) = 111.00 in.

BRIDGE GEOMETRY INPUT:

LARGER BEAM SPACING 8.500 FT
SMALLER BEAM SPACING 8.500 FT
SKEW ANGLE 80.70 DEGREES
SLAB:
D' DIMENSION 9.625 IN
DESIGN SLAB DEPTH 8.250 IN
COPING WIDTH 1.000 FT
COPING DEPTH 0.875 IN
SLAB & COPING WEIGHT 0.888 KIP/FT
SIP FORMWORK 0.120 KIP/FT
DECK OVERLAY
AVERAGE THICKNESS 0.250 IN
DECK OVERLAY WEIGHT 0.027 KIP/FT
ROADWAY WIDTH 39.000 FT
FUTURE WEARING SURFACE 0.234 KIP/FT
UTILITIES
GAS MAIN (not added to W_{DL}) 0.00 KIP/FT
TELEPHONE CONDUITS (not added to W_{DL}) 0.00 KIP/FT
WATER MAIN 0.00 KIP/FT
EDGE BEAM:
DEPTH (from top of slab) 2.30 FT
WIDTH 1.000 FT
EDGE BM. WEIGHT 2.086 KIP
DIAPHRAGM:
Plate (3/16" X 5' X 2'-8") 0.017 KIP
CHANNEL (MC 18" X 42.7") 0.043 KIP/FT
DIAPHR. WEIGHT 0.395 KIP
PARAPET:
SW, PAR., FENCE, & MEDIAN WEIGHT 1.900 KIP/FT
NUMBER OF BEAMS 5
PARAPET WEIGHT 0.380 KIP/FT
SIDEWALK LIVE LOAD:
SIDEWALK WIDTH 0 FT
SIDEWALK LOAD 0.060 KIP/FT²
NUMBER OF BEAMS 5
SIDEWALK LIVE LOAD PER BEAM 0.000 KIP/FT

DEAD LOAD CALCULATION:

SPAN LENGTH	78.50	FT		
BEAM WEIGHT	0.191	KLF		
			REACTION (K)	MOMENT (K-FT)
TOTAL DL	1.839	KIP/LF	72.164	1416.210
P-LOADS:				
TYPE	LOAD (K)	POSITION (FT)		
EDGE BEAM:	2.086	0.00	2.086	0.000
DIAPHRAGM:	0.395	19.625	0.296	5.810
DIAPHRAGM:	0.395	39.250	0.197	7.746
DIAPHRAGM:	0.395	58.875	0.099	5.810
EDGE BEAM:	2.086	78.50	0.000	0.000
			REACTION (K)	MOMENT (K-FT)
TOTAL DL			74.6	1435.6

LIVE LOAD CALCULATION:

BEAM DISTRIBUTION

	MOMENT	1.545	WHEEL	VERIFY !!
		0.773	AXLE	
	SHEAR	1.824	WHEEL	VERIFY !!
		0.912	AXLE	
IMPACT FACTOR		1.246		
HS 20 LOADING:				
	MIDSPAN:	1133	KIP-FT	
	MAX:	1138.0	KIP-FT	
HS 20 REACTION:				
			R x DF x I	
	TRUCK	63.44	KIP	66.81 KIP
	LANE	51.12	KIP	53.71 KIP
			REACTION (K)	MOMENT (K-FT)
TOTAL LL + I			66.8	1090.6
MAX TOTAL LL + I				1095.4
			REACTION (K)	MOMENT (K-FT)
TOTAL D.L. + L.L. =			141.5	2526.2

DEFLECTIONS CALCULATION:

NO. LANES	3			
NO. BEAMS	5			
REDUCTION FACTOR	0.90		FACTOR	1.080

SIMPLE SPAN PROGRAM INPUT:

LENGTH = 78.50 FT
Moment Dist. Factor (DFM) = 1.545
End Shear Dist. Factor (DFV) = 1.824
LL Deflection Dist. Factor (DFD) = 1.080
Non- Composite DL ($W_{DL,NC}$) = 1.034 KLF
Composite DL ($W_{DL,C}$) = 0.614 KLF W/ F.W.S.
Sidewalk LL ($W_{LL,S}$) = 0.000 KLF
Effective Concrete Width (W_e) = 102.00 IN
Concrete Slab Thickness (T_s) = 8.250 IN
Minimum Coping (CF) = 0.750 IN
P-LOADS:
XP1 0.00 FT
P1 2.086 K
XP2 19.625 FT
P2 0.395 K
XP3 39.250 FT
P3 0.395 K
XP4 58.875 FT
P4 0.395 K
XP5 78.500 FT
P5 2.086 K

CALCULATION SHEET

PROJECT: I-75 / I-575 NORTHWEST CORRIDOR
JOB NUMBER NH000-0575-01(028)
CALC NO. BR#37

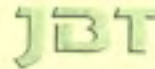
SUBJECT: Beam Design Input - Span 3
BY: JCR DATE: 11/30/2009

SHEET NO.
SHEET REV.

Sufficient sample calculations representative of the scope and conditions in the design calculation were performed and the results compared to demonstrate the computer program adequacy.

BRIDGE: I-575 over Big Shanty Road
COUNTY: CHEROKEE
P.I. NO: 713640
PROJECT: NH000-0575-01(028)

J.B. TRIMBLE, INC.



JOB NO: 31-6036
DESIGNED BY: SHG
DATE: 10/18/2009

SPAN 3

Beam Type: W 30 X 90

D' DIMENSION = 9.25 IN
MIN. COPING DEPTH = 0.375 IN

AASHTO 8.10.1.1 - Compression Flange Width

WSM FLANGE = 10.40 in.
b = 8m Spacing = 102.00 in.
b = 1/4 Span Length = 102.00 in.
b = WSM FLANGE + 2(5 SLAB) = 109.40 in.

BRIDGE GEOMETRY INPUT:

LARGER BEAM SPACING 8.500 FT
SMALLER BEAM SPACING 8.500 FT
SKEW ANGLE 80.70 DEGREES

SLAB:

D' DIMENSION 9.25 IN
DESIGN SLAB DEPTH 8.250 IN
COPING WIDTH 0.867 FT
COPING DEPTH 0.6875 IN
SLAB & COPING WEIGHT 0.884 KIP/FT
SR FORMWORK 0.122 KIP/FT

DECK OVERLAY

AVERAGE THICKNESS 0.250 IN
DECK OVERLAY WEIGHT 0.097 KIP/FT
ROADWAY WIDTH 38.000 FT
FUTURE WEARING SURFACE 0.228 KIP/FT

UTILITIES

GAS MAIN (not added to W_{DL}) 0.00 KIP/FT
TUPHON CONDUITS (not added to W_{DL}) 0.00 KIP/FT
WATER MAIN 0.00 KIP/FT

EDGE BEAM:

DEPTH (from top of slab) 2.02 FT
WIDTH 1.000 FT
EDGE BM. WEIGHT 1.723 KP

DIAPHRAGM:

Plate (3/8" X 5" X 2'-6") 0.017 KP
CHANNEL (MC 18" X 42.7") 0.043 KIP/FT
DIAPH. WEIGHT 0.395 KP

END WALL:

DEPTH (from top of slab) 3.482 FT
WIDTH 0.667 FT
PAVING NOTCH WIDTH 0.667 FT
AVG. PAVING NOTCH DEPTH 0.833 FT
END WALL WEIGHT 3.126 KP

PARAPET:

SW, PARL, FENCE, & MEDIAN WEIGHT 1.900 KIP/FT
NUMBER OF BEAMS 5
PARAPET WEIGHT 0.380 KIP/FT

SIDEWALK LIVE LOAD:

SIDEWALK WIDTH 0 FT
SIDEWALK LOAD 0.060 KIP/FT²
NUMBER OF BEAMS 5
SIDEWALK LIVE LOAD PER BEAM 0.000 KIP/FT

DEAD LOAD CALCULATION:

			REACTION (K)	MOMENT (K-FT)
SPAN LENGTH	34.00	FT		
BEAM WEIGHT	0.090	KLF		
TOTAL DL	1.731	KIP/FT	29.422	250.087

P-LOADS:

TYPE	LOAD (K)	POSITION (FT)	REACTION (K)	MOMENT (K-FT)
END WALL:	3.126	0.00	3.126	0.000
DIAPHRAGM:	0.395	17.00	0.198	3.360
EDGE BEAM:	1.723	34.00	0.000	0.000

	REACTION (K)	MOMENT (K-FT)
TOTAL DL +	32.7	253.4

LIVE LOAD CALCULATION:

BEAM DISTRIBUTION

	MOMENT	WHEEL	VERIFY III
	1.545		
	0.773	AXLE	
	1.824	WHEEL	VERIFY III
	0.912	AXLE	

IMPACT FACTOR

1.300

MILITARY LOADING:

MIDSPAN: 360 KIP-FT

HS 20 REACTION:

	TRUCK	LANE	52.24 KP	36.88 KP	R x DF x I	58.26 KP	41.75 KP

	REACTION (K)	MOMENT (K-FT)
TOTAL LL + I:	58.3	351.6

	REACTION (K)	MOMENT (K-FT)
TOTAL D.L. + L.L. +	91.0	615.1

DEFLECTIONS CALCULATION:

	NO. LANES	NO. BEAMS	REDUCTION FACTOR	FACTOR
	3	5	0.90	1.080

SIMPLE SPAN PROGRAM INPUT:

LENGTH = 34.00 FT
Moment Dist. Factor (DFM) = 1.545
End Shear Dist. Factor (DFV) = 1.824
LL Deflection Dist. Factor (DFD) = 1.080
Non-Composite DL (W_{DLK}) = 1.033 KLF
Composite DL (W_{DLK}) = 0.608 KLF W/F.W.S.
Sidewalk LL (W_{LLK}) = 0.000 KLF
Effective Concrete Width (W_c) = 102.000 IN
Concrete Slab Thickness (T_c) = 8.250 IN
Minimum Coping (Df) = 0.750 IN
P-LOADS:
XP1 0.00 FT
P1 3.126 K
XP2 17.000 FT
P2 0.395 K
XP3 34.000 FT
P3 1.723 K

CALCULATION COVER SHEET

PROJECT I-75 / I-575 NORTHWEST CORRIDOR	JOB NO. NH000-0575-01(028)	CALC NO. BR#37	SHEET 1
SUBJECT Beam Design Output		DISCIPLINE STRUCTURAL	

CALCULATION STATUS DESIGNATION	PRELIMINARY	CONFIRMED	SUPSEDED	VOIDED	INCOMPLETE
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

COMPUTER PROGRAM/TYPE	SCP <input checked="" type="radio"/> YES <input type="radio"/> NO	MAINFRAME <input type="radio"/>	PC <input checked="" type="radio"/>	PROGRAM GDOT BRSPAN	VERSION/RELEASE NO. 06/26/2008
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Note 1: Georgia Department of Transportation (GDOT) terminated Contract Number TOURDPPI60072 for its convenience the completion of all work under that contract and directed that the work with respect to these calculations be discontinued.

(a) These calculations were not completed at the time of GDOT's direction and the information contained herein is not and/or has not been fully verified or checked. These calculations are a work-in-progress and are presented only as such.

(b) Any user is cautioned that the use of these calculations and any related information or calculations, without access to factors and without proper regard for their purpose, could lead to erroneous conclusions.

(c) If any such calculations or any information contained herein is used in future work efforts or any follow on design work a complete confirmation of the information contained herein should be performed prior to any such use.

(d) GTP has no responsibility for the use of this information not under its direct control.

Beam design output is included for spans 1, 2 and 3.

A	As per GDOT's termination for convenience direction	13	13	JCR			11/30/09
NO.	REASON FOR REVISION	TOTAL NO. OF SHEETS	LAST SHEET NO.	BY	CHECKED	APPROVED/ ACCEPTED	DATE
RECORD OF REVISIONS							

CALCULATION SHEET

PROJECT: I-75 / I-575 NORTHWEST CORRIDOR
JOB NUMBER NH000-0575-01(028)
CALC NO. BR#37

SUBJECT: Beam Design Output - Span 1
BY: JCR DATE: 11/30/2009

SHEET NO.
SHEET REV.

Sufficient sample calculations representative of the scope and conditions in the design calculation were performed and the results compared to demonstrate the computer program adequacy.

I-575 OVER BIG SHANTY ROAD - SPAN 1

SPAN DATA

BEAM	D/A	L.L.C.	T L M	LENGTH	D.F.M.	D.F.V.	D.F.D.	NPL
CB	1	HS20	0 0 0	39.000	1.545	1.824	1.080	3
WDLNC	WDLNC	SWLL	E	W BM	FS	FC	WG	TYPE STEEL
1.033	0.620	0.000	29.00	0.000	27.00	1.400	0.490	572

CONCENTRATED LOADS

X1	P1	X2	P2	X3	P3	X4	P4
0.000	3.135	19.500	0.395	39.000	1.723	0.000	0.000

BEAM DATA

ROLLED	SECTION PROPERTIES	PLATE GIRDER WEB	TOP FLANGE	BOTTOM FLANGE
BEAM	P NP I Y TOP Y BOT D T W T W T			
30WF 99	0 0 0.0 0.000 0.000 0.00 0.0000 0.00 0.0000 0.00 0.0000			
0WF 0				

COMPOSITE SLAB

WIDTH	THICKNESS	COPING	SHEAR CAPACITY	ULTIMATE STRENGTH	N=ES/EC			
102.000	8.250	0.000	9.28 K/ROW	25.21 KIPS EACH	9			
BOTTOM COVER	PLATE			TOP COVER	PLATE	CONSTANT		
X-BEGIN	THICKNESS	WIDTH	LENGTH	X-BEGIN	THICKNESS	WIDTH	LENGTH	W T
0.00	0.0000	0.00	0.00	0.00	0.0000	0.00	0.00	0 0

BEAM PROPERTIES

BEAM	AREA	DEPTH	FL. W	FL. T	WEB T	I
30WF 99	29.100	29.700	10.500	0.670	0.520	3990.0

COVER PLATES

BOTTOM COVER	PLATE			TOP COVER	PLATE		
X-BEGIN	THICKNESS	WIDTH	LENGTH	X-BEGIN	THICKNESS	WIDTH	LENGTH
0.00	0.0000	0.00	0.00	0.00	0.0000	0.00	0.00

BEAM WITH PLATES PROPERTIES

AREA	Y-TOP	Y-BOTTOM	I	MIN TERMINAL WELD
29.100	14.850	14.850	3990.0	4/16

COMPOSITE SECTION PROPERTIES

	BEAM ONLY		BEAM WITH PLATES							
N	YTC	YTS	YBS	I	Q SLAB	YTC	YTS	YBS	I	Q SLAB
9	8.63	0.38	29.32	12510.9	421.1	8.63	0.38	29.32	12510.9	421.1
27	13.29	5.04	24.66	9585.2		13.29	5.04	24.66	9585.2	

NUMBER OF SHEAR CONNECTORS NEEDED TO PROVIDE FOR ULTIMATE STRENGTH 134

SIMPLE SPAN OUTPUT DATA PROBLEM NUMBER S2NW

SP	GIRDER	P-LOAD	MOMENTS (K-FT.) AT SPAN 1/20 POINTS				LIVE LOAD	RR-I
			NON-C.	TOT.NC	COMP.	SIDEWK		
1	3.6	0.4	37.3	41.3	22.4	0.0	100.2 T	0.0
2	6.8	0.8	70.7	78.2	42.4	0.0	186.3 T	0.0
3	9.6	1.2	100.2	110.9	60.1	0.0	258.3 T	0.0
4	12.0	1.5	125.7	139.3	75.4	0.0	316.2 T	0.0
5	14.1	1.9	147.3	163.3	88.4	0.0	360.0 T	0.0
6	15.8	2.3	165.0	183.1	99.0	0.0	391.4 T	0.0
7	17.1	2.7	178.7	198.5	107.3	0.0	412.8 T	0.0
8	18.1	3.1	188.5	209.7	113.2	0.0	429.3 T	0.0
9	18.6	3.5	194.4	216.5	116.7	0.0	433.6 T	0.0
10	18.8	3.9	196.4	219.1	117.9	0.0	423.8 T	0.0

STRESS (PSI) AT SPAN 1/20 POINTS

SP	MINIMUM STRESS		MAXIMUM STRESS			ALLOWABLE PS	R FACTOR	
	TOP-S	BOT-S	TOP-C	TOP-S	BOT-S		TOP-S	BOT-S
1	1984	-2535	105	2021	-5353	27000	0.982	0.474
2	3762	-4805	197	3830	-10044	27000	0.982	0.478
3	5332	-6810	274	5426	-14074	27000	0.983	0.484
4	6696	-8549	337	6811	-17443	27000	0.983	0.490
5	7852	-10024	385	7983	-20150	27000	0.984	0.498
6	8801	-11234	420	8944	-22242	27000	0.984	0.505
7	9543	-12179	445	9693	-23788	27000	0.985	0.512
8	10078	-12859	464	10234	-24933	27000	0.985	0.516
9	10406	-13274	470	10564	-25468	27000	0.985	0.521
10	10527	-13423	462	10681	-25342	27000	0.986	0.530

SHEARS (KIPS) AT SPAN 1/20 POINTS

S2NW

SP	GIRDER	P-LOAD	NON-C.	TOT.NC	COMP.	SIDEWK	LIVE LOAD	RR-I
0	1.9	3.3	20.1	25.4	12.1	0.0	60.8 T	0.0
1	1.7	0.2	18.1	20.1	10.9	0.0	51.4 T	0.0
2	1.5	0.2	16.1	17.9	9.7	0.0	47.8 T	0.0
3	1.4	0.2	14.1	15.6	8.5	0.0	44.2 T	0.0
4	1.2	0.2	12.1	13.4	7.3	0.0	40.5 T	0.0
5	1.0	0.2	10.1	11.2	6.0	0.0	36.9 T	0.0
6	0.8	0.2	8.1	9.0	4.8	0.0	33.5 T	0.0
7	0.6	0.2	6.0	6.8	3.6	0.0	30.2 T	0.0
8	0.4	0.2	4.0	4.6	2.4	0.0	27.0 T	0.0
9	0.2	0.2	2.0	2.4	1.2	0.0	24.0 M	0.0
10	0.0	-0.2	0.0	-0.2	0.0	0.0	21.6 M	0.0

DEAD LOAD DEFLECTIONS (INCHES)						SHEAR	
SP	GIRDER	P-LOAD	NON-C.	TOT.NC	COMP.	RANGE (KIPS)	CON.SPAC (IN)
0	0.000	0.000	0.000	0.000	0.000	60.8	4.53
1	0.007	0.001	0.074	0.082	0.018	53.0	5.20
2	0.014	0.002	0.146	0.162	0.036	51.0	5.41
3	0.020	0.003	0.214	0.237	0.053	49.0	5.63
4	0.026	0.004	0.276	0.307	0.069	47.7	5.78
5	0.032	0.005	0.331	0.368	0.083	46.5	5.93
6	0.036	0.006	0.378	0.420	0.094	45.4	6.07
7	0.040	0.006	0.415	0.461	0.104	44.6	6.18
8	0.042	0.007	0.443	0.492	0.111	43.8	6.29
9	0.044	0.007	0.459	0.510	0.115	43.3	6.37
10	0.045	0.007	0.465	0.517	0.116	43.3	6.37

LIVE LOAD DEFLECTIONS (INCHES)					
TRUCK	LANE	MILITARY	RAILROAD	SIDEWALK	L/ 800
0.219	0.139	0.195	0.000	0.000	0.585

CALCULATION SHEET

PROJECT: I-75 / I-575 NORTHWEST CORRIDOR
JOB NUMBER NH000-0575-01(028)
CALC NO. BR#37

SUBJECT: Beam Design Output - Span 2
BY: JCR DATE: 11/30/2009

SHEET NO.
SHEET REV.

Sufficient sample calculations representative of the scope and conditions in the design calculation were performed and the results compared to demonstrate the computer program adequacy.

I-575 OVER BIG SHANTY ROAD - SPAN 2

SPAN DATA

BEAM	D/A	L.L.C.	T L M	LENGTH	D.F.M.	D.F.V.	D.F.D.	NPL
CG	1	HS20	0 0 0	78.500	1.545	1.824	1.080	5

WDLNC	WDL	SWLL	E	W BM	FS	FC	WG	TYPE	STEEL
1.034	0.614	0.000	29.00	0.000	27.00	1.400	0.490		572

CONCENTRATED LOADS

X1	P1	X2	P2	X3	P3	X4	P4
0.000	2.086	19.625	0.395	39.250	0.395	58.875	0.395
78.500	2.086	0.000	0.000	0.000	0.000	0.000	0.000

BEAM DATA

ROLLED	SECTION PROPERTIES	PLATE GIRDER WEB	TOP FLANGE	BOTTOM FLANGE
BEAM	P NP I	Y TOP Y BOT D T	W T	W T
OWF 0 0 0	0.0	0.000 0.000	34.00 0.6250	12.00 0.7500
OWF 0				14.00 1.3750

COMPOSITE SLAB

WIDTH	THICKNESS	COPING	SHEAR CAPACITY	ULTIMATE STRENGTH	N=ES/EC
102.000	8.250	0.000	12.38 K/ROW	25.21 KIPS EACH	9

BOTTOM COVER	PLATE	TOP COVER	PLATE	CONSTANT
X-BEGIN THICKNESS WIDTH LENGTH	X-BEGIN THICKNESS WIDTH LENGTH	W T		
19.25 2.0000 14.00 40.00	19.25 1.0000 12.00 40.00	0 0		

PLATE GIRDER PROPERTIES

WEB	TOP FLANGE	BOTTOM FLANGE	WEB AND FLANGES PROPERTIES
DEPTH THICK	WIDTH THICK	WIDTH THICK	AREA Y-TOP Y-BOTTOM I
34.00 0.6250	12.00 0.7500	14.00 1.3750	49.500 21.469 14.656 10105.1

WEB AND COVER PLATES

BOTTOM	COVER	PLATE	TOP	COVER	PLATE
X-BEGIN THICKNESS WIDTH LENGTH	X-BEGIN THICKNESS WIDTH LENGTH				
19.25 2.0000 14.00 40.00	19.25 1.0000 12.00 40.00				

WEB WITH COVER PLATES PROPERTIES

AREA	Y-TOP	Y-BOTTOM	I
61.250	22.800	14.200	13393.2

COMPOSITE SECTION PROPERTIES

N	YTC	YTS	YBS	I	Q SLAB	YTC	YTS	YBS	I	Q SLAB
9	13.07	4.57	31.55	32253.3	836.5	14.78	6.53	30.47	40752.2	996.4
27	19.98	11.48	24.64	23056.1		21.97	13.72	23.28	28544.7	

NUMBER OF SHEAR CONNECTORS NEEDED TO PROVIDE FOR ULTIMATE STRENGTH 234

NUMBER OF LONGITUDINAL STIFFENERS NEEDED 0

TRANSVERSE STIFFENERS NOT REQUIRED

SIMPLE SPAN OUTPUT DATA PROBLEM NUMBER S2NW

SP	GIRDER	P-LOAD	MOMENTS (K-FT.) AT SPAN 1/20 POINTS				LIVE LOAD	RR-I
			NON-C.	TOT.NC	COMP.	SIDEWK		
1	27.8	2.3	151.3	181.4	89.9	0.0	226.0 T	0.0
2	53.0	4.7	286.7	344.4	170.3	0.0	424.8 T	0.0
3	75.6	7.0	406.2	488.8	241.2	0.0	596.5 T	0.0
4	95.6	9.3	509.7	614.6	302.7	0.0	740.9 T	0.0
5	113.0	11.6	597.4	722.0	354.7	0.0	858.1 T	0.0
6	127.4	12.4	669.0	808.9	397.3	0.0	948.2 T	0.0
7	138.7	13.2	724.8	876.7	430.4	0.0	1016.4 T	0.0
8	146.7	14.0	764.6	925.3	454.0	0.0	1068.2 T	0.0
9	151.5	14.7	788.5	954.8	468.2	0.0	1092.9 T	0.0
10	153.1	15.5	796.5	965.1	473.0	0.0	1090.3 T	0.0

STRESS (PSI) AT SPAN 1/20 POINTS

SP	MINIMUM STRESS		MAXIMUM STRESS			ALLOWABLE FS	R FACTOR	
	TOP-S	BOT-S	TOP-C	TOP-S	BOT-S		TOP-S	BOT-S
1	5163	-4310	156	5547	-6963	27000	0.931	0.619
2	9797	-8176	295	10519	-13164	27000	0.931	0.621
3	13902	-11599	415	14917	-18602	27000	0.932	0.624
4	17479	-14578	516	18739	-23276	27000	0.933	0.626
5	16794	-12657	536	18445	-20356	27000	0.911	0.622
6	18815	-14179	594	20639	-22686	27000	0.912	0.625
7	20390	-15365	638	22345	-24484	27000	0.913	0.628
8	21520	-16215	671	23575	-25799	27000	0.913	0.629
9	22204	-16729	688	24306	-26534	27000	0.914	0.630
10	22443	-16907	689	24540	-26689	27000	0.915	0.633

SHEARS (KIPS) AT SPAN 1/20 POINTS

S2NW

SP	GIRDER	P-LOAD	NON-C.	TOT.NC	COMP.	SIDEWK	LIVE LOAD	RR-I
0	7.4	2.7	40.6	50.7	24.1	0.0	66.6 T	0.0
1	6.7	0.6	36.5	43.9	21.7	0.0	57.8 T	0.0
2	6.1	0.6	32.5	39.1	19.3	0.0	54.5 T	0.0
3	5.4	0.6	28.4	34.4	16.9	0.0	51.3 T	0.0
4	4.8	0.6	24.4	29.7	14.5	0.0	48.0 T	0.0
5	4.1	0.6	20.3	25.0	12.0	0.0	44.6 T	0.0
6	3.3	0.2	16.2	19.7	9.6	0.0	41.3 T	0.0
7	2.5	0.2	12.2	14.8	7.2	0.0	37.9 T	0.0
8	1.6	0.2	8.1	10.0	4.8	0.0	34.5 T	0.0
9	0.8	0.2	4.1	5.1	2.4	0.0	31.1 T	0.0
10	0.0	0.2	0.0	0.2	0.0	0.0	27.6 T	0.0

DEAD LOAD DEFLECTIONS (INCHES)						SHEAR	
SP	GIRDER	P-LOAD	NON-C.	TOT.NC	COMP.	RANGE (KIPS)	CON.SPAC (IN)
0	0.000	0.000	0.000	0.000	0.000	66.6	7.17
1	0.075	0.007	0.396	0.479	0.108	59.4	8.03
2	0.148	0.014	0.779	0.941	0.212	58.1	8.21
3	0.216	0.021	1.136	1.372	0.310	57.3	8.34
4	0.277	0.027	1.456	1.759	0.398	56.4	8.47
5	0.329	0.032	1.730	2.091	0.474	55.5	9.13
6	0.373	0.036	1.959	2.368	0.538	54.9	9.23
7	0.408	0.039	2.142	2.589	0.589	54.7	9.26
8	0.434	0.042	2.275	2.751	0.626	54.9	9.23
9	0.449	0.043	2.356	2.849	0.648	55.0	9.20
10	0.455	0.044	2.384	2.882	0.656	55.1	9.19

LIVE LOAD DEFLECTIONS (INCHES)					
TRUCK	LANE	MILITARY	RAILROAD	SIDEWALK	L/ 800
0.679	0.507	0.486	0.000	0.000	1.178

CALCULATION SHEET

PROJECT: I-75 / I-575 NORTHWEST CORRIDOR
JOB NUMBER NH000-0575-01(028)
CALC NO. BR#37

SUBJECT: Beam Design Output - Span 3
BY: JCR DATE: 11/30/2009

SHEET NO.
SHEET REV.

Sufficient sample calculations representative of the scope and conditions in the design calculation were performed and the results compared to demonstrate the computer program adequacy.

I-575 OVER BIG SHANTY ROAD - SPAN 3

SPAN DATA

BEAM	D/A	L.L.C.	T L M	LENGTH	D.F.M.	D.F.V.	D.F.D.	NPL
CB	1	HS20	0 0 0	34.000	1.545	1.824	1.080	3
WDLNC	WDL	SWLL	E	W BM	FS	FC	WG	TYPE STEEL
1.033	0.608	0.000	29.00	0.000	27.00	1.400	0.490	572

CONCENTRATED LOADS

X1	P1	X2	P2	X3	P3	X4	P4
0.000	3.126	17.000	0.395	34.000	1.723	0.000	0.000

BEAM DATA

ROLLED	SECTION PROPERTIES	PLATE GIRDER WEB	TOP FLANGE	BOTTOM FLANGE
BEAM	P NP I Y TOP Y BOT D T W T W T			
30WF 90	0 0 0.0 0.000 0.000 0.00 0.0000 0.00 0.0000 0.00 0.0000			
OWF 0				

COMPOSITE SLAB

WIDTH	THICKNESS	COPING	SHEAR CAPACITY	ULTIMATE STRENGTH	N=ES/EC			
102.000	8.250	0.000	9.28 K/ROW	25.21 KIPS EACH	9			
BOTTOM COVER	PLATE			TOP COVER	PLATE	CONSTANT		
X-BEGIN	THICKNESS	WIDTH	LENGTH	X-BEGIN	THICKNESS	WIDTH	LENGTH	W T
0.00	0.0000	0.00	0.00	0.00	0.0000	0.00	0.00	0 0

BEAM PROPERTIES

BEAM	AREA	DEPTH	FL. W	FL. T	WEB T	I
30WF 90	26.400	29.500	10.400	0.610	0.470	3610.0

COVER PLATES

BOTTOM COVER	PLATE			TOP COVER	PLATE		
X-BEGIN	THICKNESS	WIDTH	LENGTH	X-BEGIN	THICKNESS	WIDTH	LENGTH
0.00	0.0000	0.00	0.00	0.00	0.0000	0.00	0.00

BEAM WITH PLATES PROPERTIES

AREA	Y-TOP	Y-BOTTOM	I	MIN TERMINAL WELD
26.400	14.750	14.750	3610.0	4/16

COMPOSITE SECTION PROPERTIES

	BEAM ONLY					BEAM WITH PLATES				
N	YTC	YTS	YBS	I	Q SLAB	YTC	YTS	YBS	I	Q SLAB
9	8.28	0.03	29.47	11474.8	388.6	8.28	0.03	29.47	11474.8	388.6
27	12.78	4.53	24.97	8878.9		12.78	4.53	24.97	8878.9	

NUMBER OF SHEAR CONNECTORS NEEDED TO PROVIDE FOR ULTIMATE STRENGTH 121

SIMPLE SPAN OUTPUT DATA PROBLEM NUMBER S2NW

SP	GIRDER	P-LOAD	MOMENTS (K-FT.) AT SPAN 1/20 POINTS				LIVE LOAD	RR-I
			NON-C.	TOT.NC	COMP.	SIDEWK		
1	2.5	0.3	28.4	31.2	16.7	0.0	83.0 T	0.0
2	4.7	0.7	53.7	59.1	31.6	0.0	153.8 T	0.0
3	6.6	1.0	76.1	83.8	44.8	0.0	212.2 T	0.0
4	8.3	1.3	95.5	105.2	56.2	0.0	259.7 T	0.0
5	9.8	1.7	112.0	123.4	65.9	0.0	297.3 T	0.0
6	10.9	2.0	125.4	138.3	73.8	0.0	323.9 T	0.0
7	11.8	2.4	135.8	150.0	79.9	0.0	339.7 T	0.0
8	12.5	2.7	143.3	158.5	84.3	0.0	354.8 M	0.0
9	12.9	3.0	147.8	163.7	87.0	0.0	362.3 M	0.0
10	13.0	3.4	149.3	165.6	87.9	0.0	361.5 M	0.0

STRESS (PSI) AT SPAN 1/20 POINTS

SP	MINIMUM STRESS		MAXIMUM STRESS			ALLOWABLE FS	R FACTOR	
	TOP-S	BOT-S	TOP-C	TOP-S	BOT-S		TOP-S	BOT-S
1	1630	-2091	90	1633	-4650	27000	0.998	0.450
2	3090	-3964	168	3095	-8703	27000	0.998	0.456
3	4381	-5619	232	4388	-12159	27000	0.998	0.462
4	5502	-7055	285	5510	-15057	27000	0.998	0.469
5	6453	-8273	328	6462	-17434	27000	0.999	0.475
6	7234	-9272	358	7244	-19255	27000	0.999	0.482
7	7845	-10053	377	7856	-20521	27000	0.999	0.490
8	8286	-10615	395	8297	-21549	27000	0.999	0.493
9	8557	-10960	404	8569	-22123	27000	0.999	0.495
10	8658	-11085	404	8670	-22227	27000	0.999	0.499

SHEARS (KIPS) AT SPAN 1/20 POINTS

S2NW

SP	GIRDER	P-LOAD	NON-C.	TOT.NC	COMP.	SIDEWK	LIVE LOAD	RR-I
0	1.5	3.3	17.6	22.4	10.3	0.0	58.3 T	0.0
1	1.4	0.2	15.8	17.4	9.3	0.0	48.8 T	0.0
2	1.2	0.2	14.0	15.5	8.3	0.0	45.2 T	0.0
3	1.1	0.2	12.3	13.6	7.2	0.0	41.6 T	0.0
4	0.9	0.2	10.5	11.7	6.2	0.0	38.2 T	0.0
5	0.8	0.2	8.8	9.7	5.2	0.0	35.0 T	0.0
6	0.6	0.2	7.0	7.8	4.1	0.0	31.8 T	0.0
7	0.5	0.2	5.3	5.9	3.1	0.0	28.5 T	0.0
8	0.3	0.2	3.5	4.0	2.1	0.0	26.1 M	0.0
9	0.2	0.2	1.8	2.1	1.0	0.0	23.7 M	0.0
10	0.0	-0.2	0.0	-0.2	0.0	0.0	21.3 M	0.0

DEAD LOAD DEFLECTIONS (INCHES)						SHEAR	
SP	GIRDER	P-LOAD	NON-C.	TOT.NC	COMP.	RANGE (KIPS)	CON.SPAC (IN)
0	0.000	0.000	0.000	0.000	0.000	58.3	4.70
1	0.004	0.001	0.047	0.052	0.011	50.4	5.43
2	0.008	0.002	0.093	0.103	0.022	48.4	5.66
3	0.012	0.002	0.136	0.151	0.033	46.4	5.90
4	0.015	0.003	0.176	0.195	0.042	45.0	6.09
5	0.018	0.004	0.211	0.233	0.051	44.2	6.20
6	0.021	0.004	0.241	0.266	0.058	43.4	6.32
7	0.023	0.005	0.265	0.293	0.063	42.6	6.44
8	0.025	0.005	0.283	0.312	0.068	42.5	6.44
9	0.026	0.005	0.293	0.324	0.070	42.5	6.44
10	0.026	0.005	0.297	0.328	0.071	42.5	6.44

LIVE LOAD DEFLECTIONS (INCHES)					
TRUCK	LANE	MILITARY	RAILROAD	SIDEWALK	L/ 800
0.149	0.094	0.140	0.000	0.000	0.510

CALCULATION COVER SHEET

PROJECT	JOB NO.	CALC NO.	SHEET
I-75 / I-575 NORTHWEST CORRIDOR	NH000-0575-01(028)	BR#37	1
SUBJECT	DISCIPLINE		
Shear Stud Spacing Calculations	STRUCTURAL		

CALCULATION STATUS DESIGNATION	PRELIMINARY	CONFIRMED	SUPSEDED	VOIDED	INCOMPLETE
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

COMPUTER PROGRAM/TYPE	SCP	MAINFRAME	PC	PROGRAM	VERSION/RELEASE NO.
	<input checked="" type="radio"/> YES <input type="radio"/> NO	<input type="radio"/>	<input checked="" type="radio"/>	Excel	2003

Note 1: Georgia Department of Transportation (GDOT) terminated Contract Number TOURDPP160072 for its convenience prior to the completion of all work under that contract and directed that the work with respect to these calculations be discontinued.

(a) These calculations were not completed at the time of GDOT's direction and the information contained herein is not complete and/or has not been fully verified or checked. These calculations are a work-in-progress and are presented only as such.

(b) Any user is cautioned that the use of these calculations and any related information or calculations, without access to factors and without proper regard for their purpose, could lead to erroneous conclusions.

(c) If any such calculations or any information contained herein is used in future work efforts or any follow on design work activity, a complete confirmation of the information contained herein should be performed prior to any such use.

(d) GTP has no responsibility for the use of this information not under its direct control.

Design calculations for steel beam shear stud spacings are included for spans 1, 2, and 3.

A	As per GDOT's termination for convenience direction	10	10	JCR			11/30/09
NO.	REASON FOR REVISION	TOTAL NO. OF SHEETS	LAST SHEET NO.	BY	CHECKED	APPROVED/ ACCEPTED	DATE
RECORD OF REVISIONS							

CALCULATION COVER SHEET

PROJECT	JOB NO.	CALC NO.	SHEET
I-75 / I-575 NORTHWEST CORRIDOR	NH000-0575-01(028)	BR#37	1
SUBJECT	DISCIPLINE		
Shear Stud Spacing Calculations	STRUCTURAL		

CALCULATION STATUS DESIGNATION	PRELIMINARY	CONFIRMED	SUPSEDED	VOIDED	INCOMPLETE
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

COMPUTER PROGRAM/TYPE	SCP	MAINFRAME	PC	PROGRAM	VERSION/RELEASE NO.
	<input checked="" type="radio"/> YES <input type="radio"/> NO	<input type="radio"/>	<input checked="" type="radio"/>	Excel	2003

Note 1: Georgia Department of Transportation (GDOT) terminated Contract Number TOURDPP160072 for its convenience prior to the completion of all work under that contract and directed that the work with respect to these calculations be discontinued.

(a) These calculations were not completed at the time of GDOT's direction and the information contained herein is not complete and/or has not been fully verified or checked. These calculations are a work-in-progress and are presented only as such.

(b) Any user is cautioned that the use of these calculations and any related information or calculations, without access to factors and without proper regard for their purpose, could lead to erroneous conclusions.

(c) If any such calculations or any information contained herein is used in future work efforts or any follow on design work activity, a complete confirmation of the information contained herein should be performed prior to any such use.

(d) GTP has no responsibility for the use of this information not under its direct control.

Design calculations for steel beam shear stud spacings are included for spans 1, 2, and 3.

A	As per GDOT's termination for convenience direction	10	10	JCR			11/30/09
NO.	REASON FOR REVISION	TOTAL NO. OF SHEETS	LAST SHEET NO.	BY	CHECKED	APPROVED/ ACCEPTED	DATE
RECORD OF REVISIONS							

CALCULATION SHEET

PROJECT: I-75 / I-575 NORTHWEST CORRIDOR
JOB NUMBER NH000-0575-01(028)
CALC NO. BR#37

SUBJECT: Shear Stud Spacing Calculations - Span 1
BY: JCR DATE: 11/30/2009

SHEET NO.
SHEET REV.

Sufficient sample calculations representative of the scope and conditions in the design calculation were performed and the results compared to demonstrate the computer program adequacy.

BRIDGE: I-575 over Big Shanty Road
COUNTY: CHEROKEE
P.I. NO: 713640
PROJECT: NH000-0575-01(028)



J.B. TRIMBLE, INC.
JOB NO: 31-6036
DESIGNED BY: SHG
DATE: 10/18/2009

STUD SHEAR CONNECTORS

Beam Type **W 30 X 90**

Top Flange Width = **10.4"**

Stud \varnothing = **0.75"**

No. of Studs = **3**

$Z_r = \alpha d^2$ (kips / studs)			
$\alpha \setminus d$ (in)	0.5	0.75	1
13000	3.25	7.31	13.00
10600	2.65	5.96	10.60
7850	1.96	4.42	7.85
5500	1.38	3.09	5.50

6.19

ADT (2001) = 1,000

ADT (2021) = 80,000

% TRUCKS = 4.4%

DIRECTIONAL = 100%

ADT (2031) = 119,500 in one direction

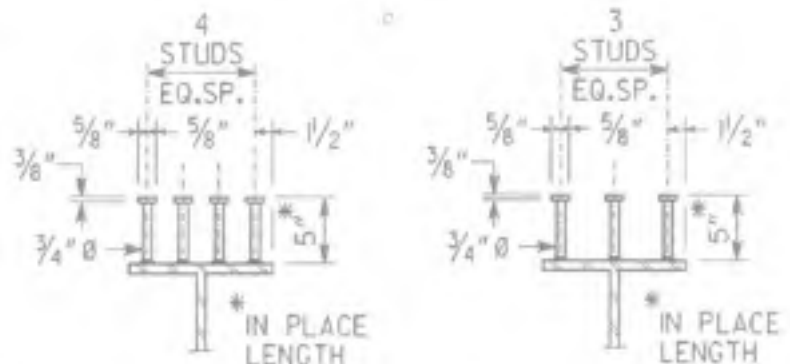
ADTT = 5,258 > 2500
USE 2,000,000 CYCLES

$Z_r = \alpha d^2$ (kips / row)			
Number of Studs : 3			
$\alpha \setminus d$ (in)	0.5	0.75	1
13000	9.75	21.94	39.00
10600	7.95	17.89	31.80
7850	5.89	13.25	23.55
5500	4.13	9.28	16.50

$Z_r = \alpha d^2$ (kips / row)			
Number of Studs : 4			
$\alpha \setminus d$	0.5	0.75	1
13000	13.00	29.25	52.00
10600	10.60	23.85	42.40
7850	7.85	17.66	31.40
5500	5.50	12.38	22.00

$$E_c = 150^{1.5} 33 (f'_c)^{1/4} \quad (\text{AASHTO 10.38.5.1.2})$$

$S_u = 0.4 d^2 (f'_c E_c)^{1/2}$ (AASHTO)			
d (in)	f'_c (psi)	E_c (psi)	S_u (kips)
0.5	3000	3320561	9.98
0.75	3000	3320561	22.46
1	3000	3320561	39.92
0.5	3500	3586616	11.20
0.75	3500	3586616	25.21
1	3500	3586616	44.82



AASHTO 10.38.2.4 The clear distance between the edge of a girder flange and the edge of the shear connector shall be not less than 1". Adjacent stud shear connectors shall not be closer than 4 diameters center to center.

GDOT calls for 3/4" \varnothing studs and 1 1/2" clear from edge of girder flange to CL of stud. Therefore, 4 studs are only allowed for beams with a minimum flange width of 12" +/-.

Shear Capacity (Z_r) = 9.28 K/Row

Ultimate Strength (S_u) = 25.21 kips

BRIDGE: I-575 over Big Shanty Road
COUNTY: CHEROKEE
P.I. NO: 713640
PROJECT: NH000-0575-01(028)



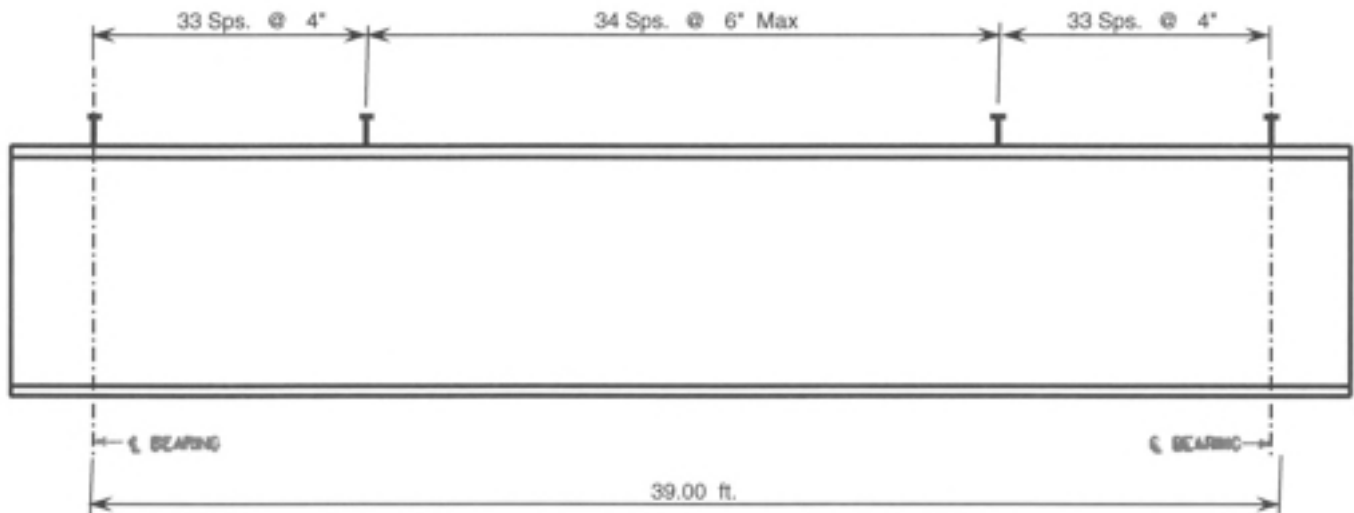
J.B. TRIMBLE, INC.
JOB NO: 31-6036
DESIGNED BY: SHG
DATE: 10/18/2009

SHEAR STUD SPACING

Design Length = 39 ft.

Location (ft.)	s (in)
0.0	4.53
2.0	5.20
3.9	5.41
5.9	5.63
7.8	5.78
9.8	5.93
11.7	6.07
13.7	6.18
15.6	6.29
17.6	6.37
19.5	6.37

	Spacing 1	Spacing 2
Stud Spacing:	4 in.	6 in.



CALCULATION SHEET

PROJECT: I-75 / I-575 NORTHWEST CORRIDOR
JOB NUMBER NH000-0575-01(028)
CALC NO. BR#37

SUBJECT: Shear Stud Spacing Calculations - Span 2
BY: JCR DATE: 11/30/2009

SHEET NO.
SHEET REV.

Sufficient sample calculations representative of the scope and conditions in the design calculation were performed and the results compared to demonstrate the computer program adequacy.

BRIDGE: I-575 over Big Shanty Road
COUNTY: CHEROKEE
P.I. NO: 713640
PROJECT: NH000-0575-01(028)



J.B. TRIMBLE, INC.
JOB NO: 31-6036
DESIGNED BY: SHG
DATE: 10/23/2009

STUD SHEAR CONNECTORS

Beam Type Top Flange Width = 12"

Stud $\varnothing = 0.75"$

No. of Studs = 4

$Z_r = \alpha d^2$ (kips / studs)			
$\alpha \setminus d$ (in)	0.5	0.75	1
13000	3.25	7.31	13.00
10600	2.65	5.96	10.60
7850	1.96	4.42	7.85
5500	1.38	3.09	5.50

6.19

ADT (2001) = 1,000

ADT (2021) = 80,000

% TRUCKS = 4.4%

DIRECTIONAL = 100%

ADT (2031) = 119,500 in one direction

ADTT = 5,258 > 2500

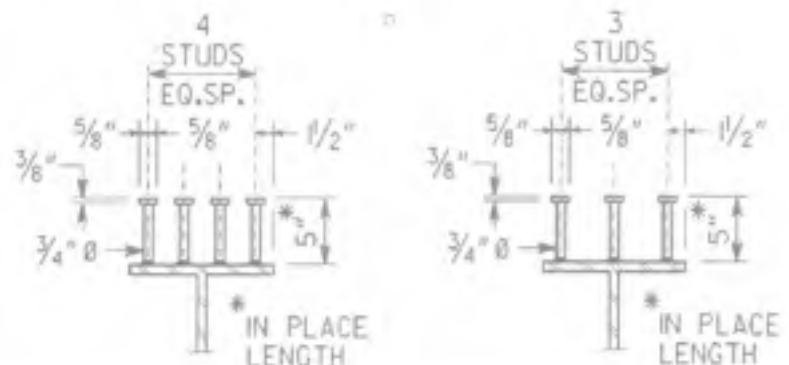
USE 2,000,000 CYCLES

$Z_r = \alpha d^2$ (kips / row)			
Number of Studs : 3			
$\alpha \setminus d$ (in)	0.5	0.75	1
13000	9.75	21.94	39.00
10600	7.95	17.89	31.80
7850	5.89	13.25	23.55
5500	4.13	9.28	16.50

$Z_r = \alpha d^2$ (kips / row)			
Number of Studs : 4			
$\alpha \setminus d$	0.5	0.75	1
13000	13.00	29.25	52.00
10600	10.60	23.85	42.40
7850	7.85	17.66	31.40
5500	5.50	12.38	22.00

$E_c = 150^{1.5} 33 (f'_c)^{1/4}$ (AASHTO 10.38.5.1.2)

$S_u = 0.4 d^2 (f'_c E_c)^{1/2}$ (AASHTO)			
d (in)	f'_c (psi)	E_c (psi)	S_u (kips)
0.5	3000	3320561	9.98
0.75	3000	3320561	22.46
1	3000	3320561	39.92
0.5	3500	3586616	11.20
0.75	3500	3586616	25.21
1	3500	3586616	44.82



AASHTO 10.38.2.4 The clear distance between the edge of a girder flange and the edge of the shear connector shall be not less than 1". Adjacent stud shear connectors shall not be closer than 4 diameters center to center.

GDOT calls for 3/4" \varnothing studs and 1 1/2" clear from edge of girder flange to CL of stud. Therefore, 4 studs are only allowed for beams with a minimum flange width of 12" +/-.

Shear Capacity (Z_r) = 12.38 K/Row

Ultimate Strength (S_u) = 25.21 kips

BRIDGE: I-575 over Big Shanty Road
 COUNTY: CHEROKEE
 P.I. NO: 713640
 PROJECT: NH000-0575-01(028)



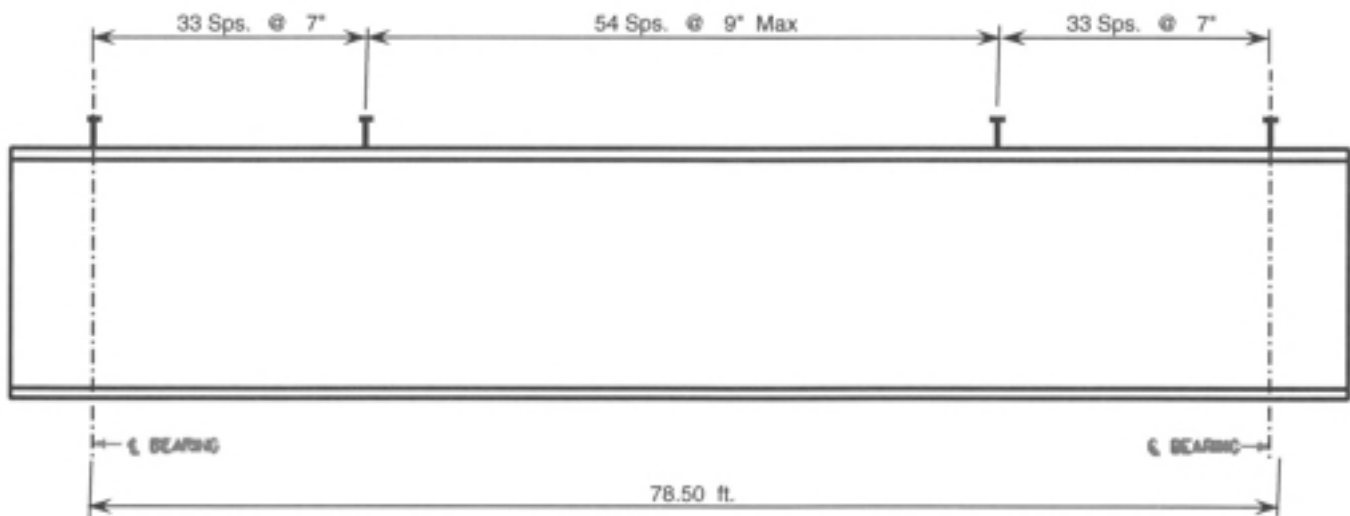
J.B. TRIMBLE, INC.
 JOB NO: 31-6036
 DESIGNED BY: SHG
 DATE: 10/23/2009

SHEAR STUD SPACING

Design Length = 78.5 ft.

Location (ft.)	s (in)
0.0	7.17
3.9	8.03
7.9	8.21
11.8	8.34
15.7	8.47
19.6	9.13
23.6	9.23
27.5	9.26
31.4	9.23
35.3	9.20
39.3	9.19

	Spacing 1	Spacing 2
Stud Spacing:	7 in.	9 in.



CALCULATION SHEET

PROJECT: I-75 / I-575 NORTHWEST CORRIDOR
JOB NUMBER NH000-0575-01(028)
CALC NO. BR#37

SUBJECT: Shear Stud Spacing Calculations - Span 3
BY: JCR DATE: 11/30/2009

SHEET NO.
SHEET REV.

Sufficient sample calculations representative of the scope and conditions in the design calculation were performed and the results compared to demonstrate the computer program adequacy.

BRIDGE: I-575 over Big Shanty Road
COUNTY: CHEROKEE
P.I. NO: 713640
PROJECT: NH000-0575-01(028)



J.B. TRIMBLE, INC.
JOB NO: 31-6036
DESIGNED BY: SHG
DATE: 10/18/2009

STUD SHEAR CONNECTORS

Beam Type Top Flange Width = 10.4"

Stud $\varnothing = 0.75"$

No. of Studs = 3

$Z_r = \alpha d^2$ (kips / studs)			
$\alpha \setminus d$ (in)	0.5	0.75	1
13000	3.25	7.31	13.00
10600	2.65	5.96	10.60
7850	1.96	4.42	7.85
5500	1.38	3.09	5.50

6.19

ADT (2001) = 1,000

ADT (2021) = 80,000

% TRUCKS = 4.4%

DIRECTIONAL = 100%

ADT (2031) = 119,500 in one direction

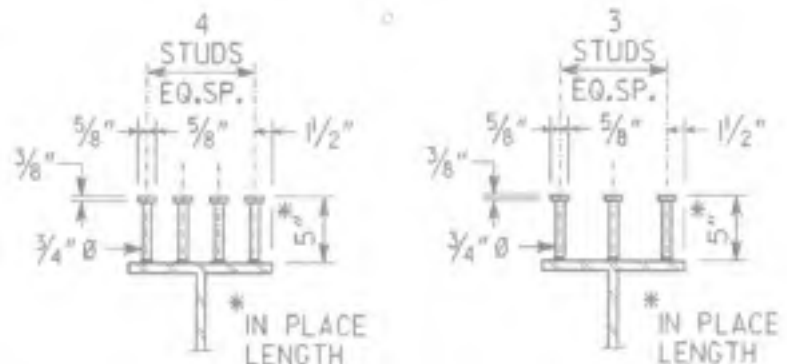
ADTT = 5,258 > 2500
USE 2,000,000 CYCLES

$Z_r = \alpha d^2$ (kips / row)			
Number of Studs : 3			
$\alpha \setminus d$ (in)	0.5	0.75	1
13000	9.75	21.94	39.00
10600	7.95	17.89	31.80
7850	5.89	13.25	23.55
5500	4.13	9.28	16.50

$Z_r = \alpha d^2$ (kips / row)			
Number of Studs : 4			
$\alpha \setminus d$	0.5	0.75	1
13000	13.00	29.25	52.00
10600	10.60	23.85	42.40
7850	7.85	17.66	31.40
5500	5.50	12.38	22.00

$E_c = 150^{1.5} 33 (f'_c)^{1.5}$ (AASHTO 10.38.5.1.2)

$S_u = 0.4 d^2 (f'_c E_c)^{1/2}$ (AASHTO)			
d (in)	f'_c (psi)	E_c (psi)	S_u (kips)
0.5	3000	3320561	9.98
0.75	3000	3320561	22.46
1	3000	3320561	39.92
0.5	3500	3586616	11.20
0.75	3500	3586616	25.21
1	3500	3586616	44.82



AASHTO 10.38.2.4 The clear distance between the edge of a girder flange and the edge of the shear connector shall be not less than 1". Adjacent stud shear connectors shall not be closer than 4 diameters center to center.

GDOT calls for 3/4" \varnothing studs and 1 1/2" clear from edge of girder flange to CL of stud. Therefore, 4 studs are only allowed for beams with a minimum flange width of 12" +/-.

Shear Capacity (Z_r) = 9.28 K/Row

Ultimate Strength (S_u) = 25.21 kips

BRIDGE: I-575 over Big Shanty Road
 COUNTY: CHEROKEE
 P.I. NO: 713640
 PROJECT: NH000-0575-01(028)



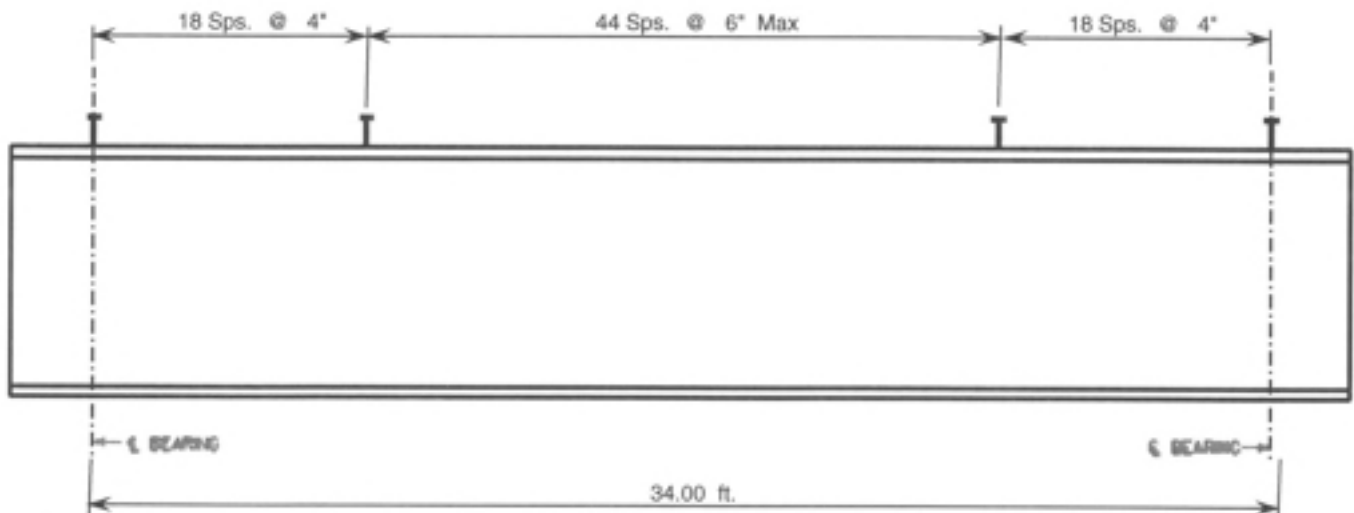
J.B. TRIMBLE, INC.
 JOB NO: 31-6036
 DESIGNED BY: SHG
 DATE: 10/18/2009

SHEAR STUD SPACING

Design Length = 34 ft.

Location (ft.)	s (in)
0.0	4.70
1.7	5.43
3.4	5.66
5.1	5.90
6.8	6.09
8.5	6.20
10.2	6.32
11.9	6.44
13.6	6.44
15.3	6.44
17.0	6.44

	Spacing 1	Spacing 2
Stud Spacing:	4 in.	6 in.



CALCULATION COVER SHEET

PROJECT	JOB NO.	CALC NO.	SHEET
I-75 / I-575 NORTHWEST CORRIDOR	NH000-0575-01(028)	BR#37	1
SUBJECT	DISCIPLINE		
Bearing Design	STRUCTURAL		

CALCULATION STATUS DESIGNATION	PRELIMINARY	CONFIRMED	SUPSEDED	VOIDED	INCOMPLETE
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COMPUTER PROGRAM/TYPE	SCP	MAINFRAME	PC	PROGRAM	VERSION/RELEASE NO.
	<input checked="" type="radio"/> YES <input type="radio"/> NO	<input type="radio"/>	<input checked="" type="radio"/>	Excel	2003

Note 1: Georgia Department of Transportation (GDOT) terminated Contract Number TOURDPP160072 for its convenience prior to the completion of all work under that contract and directed that the work with respect to these calculations be discontinued.

(a) These calculations were not completed at the time of GDOT's direction and the information contained herein is not complete and/or has not been fully verified or checked. These calculations are a work-in-progress and are presented only as such.

(b) Any user is cautioned that the use of these calculations and any related information or calculations, without access to factors and without proper regard for their purpose, could lead to erroneous conclusions.

(c) If any such calculations or any information contained herein is used in future work efforts or any follow on design work activity, a complete confirmation of the information contained herein should be performed prior to any such use.

(d) GTP has no responsibility for the use of this information not under its direct control.

Bearing Design calculations are included for bearings at bents 1, 2, 3 and 4.

A	As per GDOT's termination for convenience direction	9	9	JCR			11/30/09
NO.	REASON FOR REVISION	TOTAL NO. OF SHEETS	LAST SHEET NO.	BY	CHECKED	APPROVED/ ACCEPTED	DATE
RECORD OF REVISIONS							

CALCULATION SHEET

PROJECT: I-75 / I-575 NORTHWEST CORRIDOR
JOB NUMBER NH000-0575-01(028)
CALC NO. BR#37

SUBJECT: Bearing Design
BY: JCR DATE: 11/30/2009

SHEET NO.
SHEET REV.

Sufficient sample calculations representative of the scope and conditions in the design calculation were performed and the results compared to demonstrate the computer program adequacy.

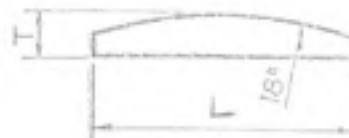
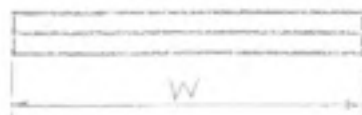
BRIDGE: I-575 over Big Shanty Road
 COUNTY: CHEROKEE
 P.I. NO: 713640
 PROJECT: NH000-0575-01(028)

J.B. TRIMBLE, INC.



JOB NO: 31-6036
 DESIGNED BY: SHG
 DATE: 10/30/2009

SUGGESTED SHAPE AND SIZE OF SELF LUBRICATING BRONZE PLATES



SIZE AND MAXIMUM LOAD					
W	L	T	WITH SLOTS 2-3 X 1 ³ / ₁₆	WITH HOLES 2-1 ³ / ₁₆ Ø	PLAIN
10	7	1			140
10	8	1 ¹ / ₂			160
10	9	1 ¹ / ₂			180
10 ¹ / ₂	7	1			147
10 ¹ / ₂	8	1 ¹ / ₂			168
✓ 10 ¹ / ₂	9	1 ¹ / ₂			189
12	6	1	131	140	144
12	7	1	155	164	168
12	8	1 ¹ / ₂	179	188	192
12	9	1 ¹ / ₂			216

USE ONLY THOSE PLATES WHICH HAVE A MAXIMUM LOAD SHOWN

PURPOSE: To standardize plate sizes within the office so that plates may be stocked by suppliers, thus making them more economical.

DESIGN SPECIFICATION: Bronze plates shall conform to ASTM Designation B 22 Alloy B and supplemental specifications and shall have an allowable unit stress of 2000 psi in compression.

LIMITATIONS: Sliding plate type bearings shall not be used where the anticipated total movement (expansion plus contraction) exceeds 3 inches for assemblies without anchor bolts through the flanges and 2 inches for assemblies with anchor bolts through the flanges.

When the gradient of the girder at the bearing exceeds 4.0%, the top of the upper plate (sole plate) shall be beveled to match the girder gradient.

COEFFICIENT OF FRICTION: For design purposes a value of 0.10 shall be used.

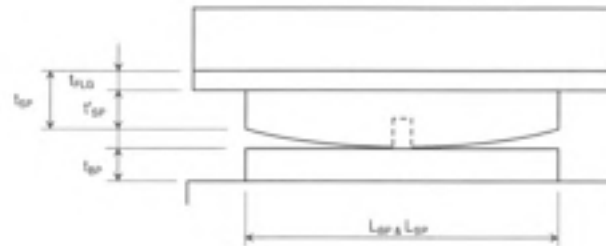
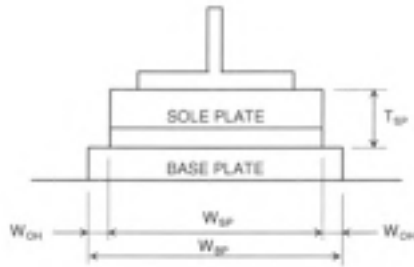
NOTE: Width of LBS A is to BE 2" LESS THAN WIDTH OF SLIP B.

BRIDGE: I-575 over Big Shanty Road
COUNTY: CHEROKEE
P.I. NO: 713640
PROJECT: NH000-0575-01(028)

J.B. TRIMBLE, INC.
JBT

JOB NO: 31-6036
DESIGNED BY: SHG
DATE: 10/30/2009

PJC
11/3/09



BENT 1

FIXED BEARING CALCULATIONS

GENERAL INPUT:

Beam Type	W 30 X 99	
R (Reaction) =	98.3 Kips	
Bottom Flange Thickness, t_{FLO} =	0.6875 in	17 mm
W_{SP} =	10.500 in	267 mm
W_{BP} =	10.50 in	267 mm
L_{SP} =	9.00 in	229 mm
F_u =	3500 psi	
$F_b = 0.3f'_c$ =	1.050 ksi	
AASHTO Art. 8.15.2.1.3		

SOLE PLATE:

$$M=RL/8$$

$$S=wt^2/6$$

$$t_p=M/S$$

F_y =	36000 psi		AASHTO Table 10.2B
$F_{yb} = .55F_y$ =	19.8 ksi		AASHTO 10.32.1A
$t_{SP} = [3/4(RW_{SP})/(L_{SP}F_{yb})]^{1/2}$ =	2.08 in.		
$t'_{SP} = t_{SP} - t_{FLO}$ =	1.40		35 mm
Rad (Radius) =	18.00 in		
$= t'_{SP} + \text{Rad} - [\text{Rad}^2 - (1/2 L_{SP})^2]^{1/2}$ =	1.97 in -----> use =	2.00 in	51 mm

BASE (MASONRY) PLATE: $M=(R/W)(W/2)(W/4)=RW/8$

$$S_y=W_{SP}T_{SP}^2/6$$

$$t_p=M/S$$

$L_{BP} = R/(W_{BP}F_b)$ =	8.92 in -----> use =	9.00 in	229 mm
$t_{BP} = [3/4(RL_{BP})/(W_{BP}F_{yb})]^{1/2}$ =	1.79 in -----> use =	2.00 in	51 mm

ALLOWABLE BEARING ON CONCRETE:

$$f_b = R/(L_{BP} * W_{BP}) = 1.040 \text{ ksi} \quad f_b < F_b \rightarrow \text{OK}$$

BASE PLATE			SOLE PLATE			BEARING DEPTH
WIDTH	LENGTH	HEIGHT	WIDTH	LENGTH	HEIGHT	
10.5"	9"	2"	10.5"	9"	2"	4"

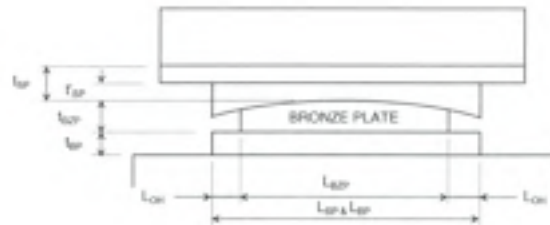
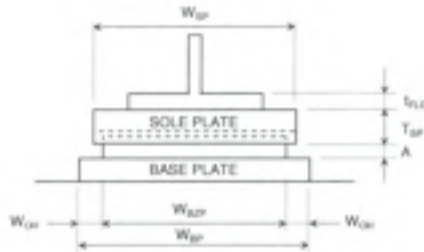
BRIDGE: I-575 over Big Shanty Road
COUNTY: CHEROKEE
P.I. NO: 713640
PROJECT: NH000-0575-01(028)

J.B. TRIMBLE, INC.



JOB NO: 31-6036
DESIGNED BY: SHG
DATE: 10/30/2009

256
11/5/09



EXPANSION BEARING CALCULATIONS

BENT 2 BK

GENERAL INPUT:

Beam Type	W 30 x 99	
R (Reaction) =	98.3	Kips
Bottom Flange Thick, t_{fLO} =	0.6875	in
W_{SP} =	10.500	in
W_{BP} =	10.50	in
W_{CH} =	10.50	in
L_{SP} =	9.00	in
L_{BP} =	9.00	in
		17 mm
		267 mm
		267 mm
		267 mm
		229 mm
		229 mm

ALLOWABLE BEARING ON CONCRETE:

F_c =	3500	psi
$F_b = 0.3F_c$ =	1.050	ksi
$f_b = R/(L_{BP} \cdot W_{BP})$ =	1.040	ksi
		$f_b < F_b \rightarrow OK$

BRONZE PLATE WIDTH (W_{BP}):

TYPE = SELF LUBRICATING ASTM B22 ALLOY 911				
BEARING CAPACITY =	2000	psi		
L_{BP} =	4.68	in	use =	7.0 in 178 mm

BASE (MASONRY) PLATE:

Max of W_{CH} or L_{CH} =	1.00	in
$M = wL^2/2 = f_b \text{ Max}(W_{CH} \text{ or } L_{CH})^2/2$ =	0.52	K-in
F_y =	36000	psi
$F_{yb} = .55F_y$ =	19.8	ksi
$t_{BP} = [6M/F_{yb}]^{1/3}$ =	0.40	in
use =	0.50	in
		13 mm
		AASHTO Table 10.2B
		AASHTO 10.32.1A

SOLE PLATE:

$t_{SP} = [3/4(RW_{SP})/(L_{SP}F_{yb})]^{1/3}$ =	2.08	in
$r_{SP} = t_{SP} - t_{fLO}$ =	1.40	in
use =	1.50	in
Rad (Radius) =	18.00	in
$T_{SP} = r_{SP} + \text{Rad} - [(Rad^2 - (1/2)L_{BP})^2]^{1/2}$ =	1.84	in
use =	2.00	in

BRONZE PLATE THICKNESS (t_{BP}):

A =	0.50	in
$t_{BP} = (T_{SP} - r_{SP}) + A$ =	1.00	in
use =	1.00	in
		25 mm

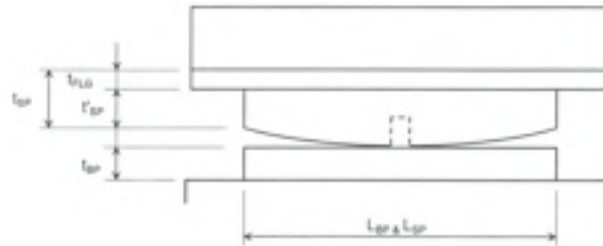
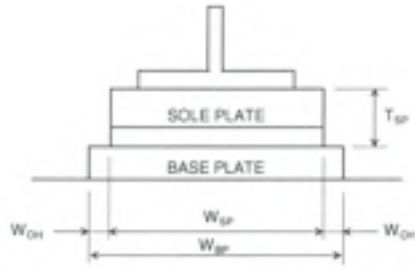
BASE PLATE			SOLE PLATE			BRONZE PLATE			BEARING DEPTH
WIDTH	LENGTH	HEIGHT	WIDTH	LENGTH	HEIGHT	WIDTH	LENGTH	HEIGHT	
10.5"	9"	0.5"	10.5"	9"	1.5"	10.5"	7"	1"	3"

BRIDGE: I-575 over Big Shanty Road
COUNTY: CHEROKEE
P.I. NO: 713640
PROJECT: NH000-0575-01(028)

J.B. TRIMBLE, INC.
JBT

JOB NO: 31-6036
DESIGNED BY: SHG
DATE: 10/30/2009

PJC
11/3/09



BENT 2 AH

FIXED BEARING CALCULATIONS

GENERAL INPUT:

Beam Type	Plate Girder	
R (Reaction) =	141.5 Kips	
Bottom Flange Thickness, t_{FLG} =	1.375 in	35 mm
W_{SP} =	14.00 in	356 mm
W_{BP} =	14.00 in	356 mm
L_{SP} =	9.75 in	248 mm
f'_c =	3500 psi	
$F_b = 0.3f'_c$ =	1,050 ksi	
AASHTO Art. 8.15.2.1.3		

SOLE PLATE:

$M = RL/8$	$S = wt^2/6$	$I_p = M/S$
$F_y =$	36000 psi	AASHTO Table 10.2B
$F_{yb} = .55F_y =$	19.8 ksi	AASHTO 10.32.1A
$t_{SP} = [3/4(RW_{SP})/(L_{SP}F_{yb})]^{1/3} =$	2.77 in.	
$t'_{SP} = t_{SP} - t_{FLG} =$	1.40	36 mm
Rad (Radius) =	18.00 in	
$= t'_{SP} + \text{Rad} - [\text{Rad}^2 - (1/2 L_{SP})^2]^{1/2} =$	2.07 in -----> use =	2.25 in 57 mm

BASE (MASONRY) PLATE:

$M = (RW)(W/2)(W/4) = RW/8$	$S_x = W_{SP} T_{SP}^2/6$	$I_p = M/S$
$L_{BP} = R/(W_{BP} F_b) =$	9.62 in -----> use =	9.75 in 248 mm
$t_{BP} = [3/4(RL_{BP})/(W_{BP} F_{yb})]^{1/3} =$	1.93 in -----> use =	2.00 in 51 mm

ALLOWABLE BEARING ON CONCRETE:

$$f_b = R/(L_{BP} * W_{BP}) = 1.036 \text{ ksi} \quad f_b < F_b \rightarrow \text{OK}$$

BASE PLATE			SOLE PLATE			BEARING DEPTH
WIDTH	LENGTH	HEIGHT	WIDTH	LENGTH	HEIGHT	
14"	9.75"	2"	14"	9.75"	2.25"	4.25"

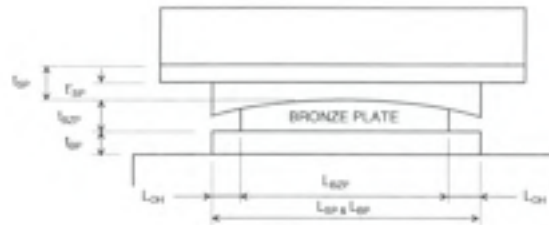
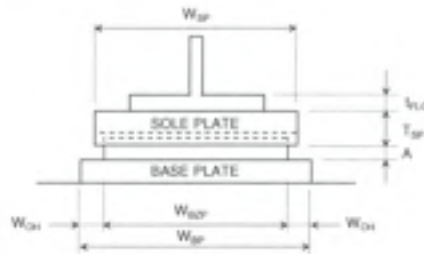
BRIDGE: I-575 over Big Shanty Road
COUNTY: CHEROKEE
P.I. NO: 713640
PROJECT: NH000-0575-01(028)

J.B. TRIMBLE, INC.



JOB NO: 31-6036
DESIGNED BY: SHG
DATE: 10/30/2009

PTC
11/3/09



EXPANSION BEARING CALCULATIONS

BENT 3 BK

GENERAL INPUT:

Beam Type	Plate Girder	
R (Reaction) =	141.5	Kips
Bottom Flange Thick, t_{LO} =	1.375	in
W_{SP} =	14.00	in
W_{BP} =	12.00	in
W_{BP} =	14.00	in
L_{SP} =	8.00	in
L_{BP} =	9.75	in
		35 mm
		356 mm
		305 mm
		356 mm
		203 mm
		248 mm

ALLOWABLE BEARING ON CONCRETE:

F_c =	3500	psi
$F_b = 0.3F_c$ =	1.050	ksi
$f_b = R/(L_{BP} * W_{BP})$ =	1.036	ksi
	$f_b < F_b \rightarrow$ OK	

BRONZE PLATE WIDTH (W_{BP}):

TYPE = SELF LUBRICATING ASTM B22 ALLOY 911					
BEARING CAPACITY =	2000	psi			
L_{BP} =	5.89	in	-----> use =	6.0	in
					152 mm

BASE (MASONRY) PLATE:

Max of W_{CH} or L_{CH} =	1.88	in
$M = wL^2/2 = f_b \text{ Max}(W_{CH} \text{ or } L_{CH})^2/2$ =	1.82	K-in
F_y =	36000	psi
$F_{yb} = .55F_y$ =	19.8	ksi
$t_{BP} = [6M/F_{yb}]^{1/3}$ =	0.74	in
use =	0.75	in
		19 mm
		AASHTO Table 10.28
		AASHTO 10.32.1A

SOLE PLATE:

$t_{SP} = [3/4(RW_{SP})/(L_{SP}F_{y0})]^{1/3}$ =	3.06	in.
$t_{SP} = t_{SP} - t_{LO}$ =	1.69	in
use =	1.75	in
Rad (Radius) =	18.00	in
$T_{SP} = t_{SP} + \text{Rad} - [\text{Rad}^2 - (1/2L_{BP})^2]^{1/2}$ =	2.00	in
use =	2.00	in

BRONZE PLATE THICKNESS (t_{BP}):

A =	0.50	in
$t_{BP} = (T_{SP} - t_{SP}) + A$ =	0.75	in
use =	0.75	in
		19 mm

BASE PLATE			SOLE PLATE			BRONZE PLATE			BEARING DEPTH
WIDTH	LENGTH	HEIGHT	WIDTH	LENGTH	HEIGHT	WIDTH	LENGTH	HEIGHT	
14"	9.75"	0.75"	14"	8"	1.75"	12"	6"	1"	3.5"

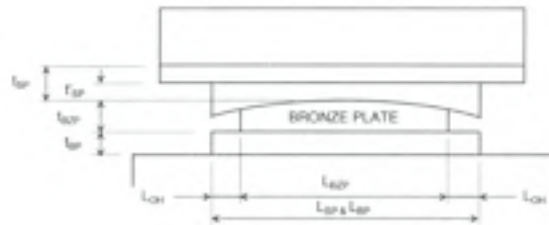
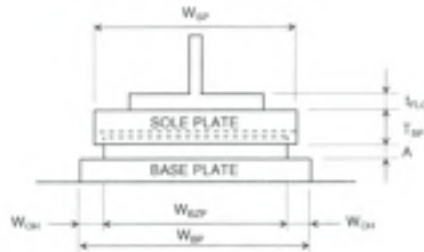
BRIDGE: I-575 over Big Shanty Road
COUNTY: CHEROKEE
P.I. NO: 713640
PROJECT: NH000-0575-01(028)

J.B. TRIMBLE, INC.



JOB NO: 31-6036
DESIGNED BY: SHG
DATE: 10/30/2009

VJC
11/3/09



EXPANSION BEARING CALCULATIONS

BENT 3 AH

GENERAL INPUT:

Beam Type	W 30 x 90	
R (Reaction) =	91.0	Kips
Bottom Flange Thick, t_{fLO} =	0.5625	in
W_{SP} =	10.375	in
W_{BP} =	10.00	in
W_{BP} =	10.38	in
L_{SP} =	9.00	in
L_{BP} =	9.00	in
		14 mm
		264 mm
		254 mm
		264 mm
		229 mm
		229 mm

ALLOWABLE BEARING ON CONCRETE:

F_c =	3500	psi
$F_b = 0.3F_c$ =	1.050	ksi
$f_b = R/(L_{BP} \cdot W_{BP})$ =	0.975	ksi
	$f_b < F_b \rightarrow$ OK	

BRONZE PLATE WIDTH (W_{BP}):

TYPE = SELF LUBRICATING ASTM B22 ALLOY 911					
BEARING CAPACITY =	2000	psi			
L_{BP} =	4.55	in	use =	7.0	in 178 mm

BASE (MASONRY) PLATE:

Max of W_{CH} or L_{CH} =	1.00	in
$M = wL^2/2 = t_b \text{ Max}(W_{CH} \text{ or } L_{CH})^2/2$ =	0.49	K-in
F_y =	36000	psi
$F_{yb} = .55F_y$ =	19.8	ksi
$t_{BP} = [6MF_{yb}]^{1/3}$ =	0.38	in
	use =	0.50 in 13 mm
		AASHTO Table 10.28
		AASHTO 10.32.1A

SOLE PLATE:

$t_{SP} = [3/4(RW_{SP})/(L_{SP}F_{yb})]^{1/3}$ =	1.99	in
$t_{SP} = t_{SP} - t_{fLO}$ =	1.43	in
	use =	1.50 in
Rad (Radius) =	18.00	in
$T_{SP} = t_{SP} + \text{Rad} \cdot [Rad^2 - (1/2L_{BP})^2]^{1/2}$ =	1.84	in
	use =	2.00 in

BRONZE PLATE THICKNESS (t_{BP}):

A =	0.50	in
$t_{BP} = (T_{SP} - t_{SP}) + A$ =	1.00	in
	use =	1.00 in 25 mm

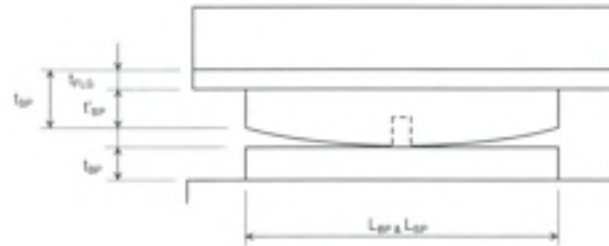
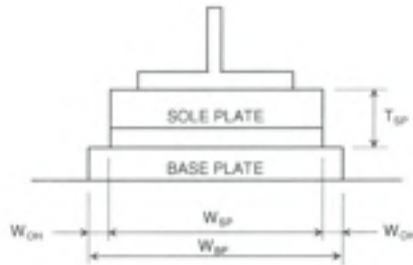
BASE PLATE			SOLE PLATE			BRONZE PLATE			BEARING DEPTH
WIDTH	LENGTH	HEIGHT	WIDTH	LENGTH	HEIGHT	WIDTH	LENGTH	HEIGHT	
10.375"	9"	0.5"	10.375"	9"	1.5"	10"	7"	1"	3"

BRIDGE: I-575 over Big Shanty Road
 COUNTY: CHEROKEE
 P.I. NO: 713640
 PROJECT: NH000-0575-01(028)

J.B. TRIMBLE, INC.


JOB NO: 31-6036
 DESIGNED BY: SHG
 DATE: 10/30/2009

MSC
11/2/09



BENT 4

FIXED BEARING CALCULATIONS

GENERAL INPUT:

Beam Type	W 30 X 90	
R (Reaction) =	91.0 Kips	
Bottom Flange Thickness, t_{FLG} =	0.5625 in	14 mm
W_{SP} =	10.375 in	264 mm
W_{BP} =	10.375 in	264 mm
L_{SP} =	8.50 in	216 mm
f'_c =	3500 psi	
$F_b = 0.3f'_c$ =	1.050 ksi	
AASHTO Art. 8.15.2.1.3		

SOLE PLATE:

F_y =	36000 psi	AASHTO Table 10.2B
$F_{yb} = .55F_y$ =	19.8 ksi	AASHTO 10.32.1A
$t_{SP} = [3/4(RW_{SP})/(L_{SP}F_{yb})]^{1/3}$ =	2.05 in.	
$t'_{SP} = t_{SP} - t_{FLG}$ =	1.49	38 mm
Rad (Radius) =	18.00 in	
$t_{SP} = t'_{SP} + Rad - [Rad^2 - (1/2 L_{SP})^2]^{1/2}$ =	2.00 in -----> use =	51 mm

BASE (MASONRY) PLATE: $M=(RW)(W/2)(W/4)=RW/8$

$L_{BP} = R/(W_{BP}F_b)$ =	8.35 in -----> use =	8.50 in	216 mm
$t_{BP} = [3/4(RL_{BP})/(W_{BP}F_{yb})]^{1/3}$ =	1.68 in -----> use =	1.75 in	44 mm

ALLOWABLE BEARING ON CONCRETE:

$$f_b = R/(L_{BP} * W_{BP}) = 1.032 \text{ ksi} \quad f_b < F_b \rightarrow \text{OK}$$

BASE PLATE			SOLE PLATE			BEARING DEPTH
WIDTH	LENGTH	HEIGHT	WIDTH	LENGTH	HEIGHT	
10.375"	8.5"	1.75"	10.375"	8.5"	2"	3.75"

CALCULATION COVER SHEET

PROJECT	JOB NO.	CALC NO.	SHEET
I-75 / I-575 NORTHWEST CORRIDOR	NH000-0575-01(028)	BR#37	1
SUBJECT	DISCIPLINE		
Substructure Design Input	STRUCTURAL		

CALCULATION STATUS DESIGNATION	PRELIMINARY	CONFIRMED	SUPSEDED	VOIDED	INCOMPLETE
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

COMPUTER PROGRAM/TYPE	SCP	MAINFRAME	PC	PROGRAM	VERSION/RELEASE NO.
	<input checked="" type="radio"/> YES <input type="radio"/> NO	<input type="radio"/>	<input checked="" type="radio"/>	Excel	2003

Note 1: Georgia Department of Transportation (GDOT) terminated Contract Number TOURDPP160072 for its convenience prior to the completion of all work under that contract and directed that the work with respect to these calculations be discontinued.

(a) These calculations were not completed at the time of GDOT's direction and the information contained herein is not complete and/or has not been fully verified or checked. These calculations are a work-in-progress and are presented only as such.

(b) Any user is cautioned that the use of these calculations and any related information or calculations, without access to factors and without proper regard for their purpose, could lead to erroneous conclusions.

(c) If any such calculations or any information contained herein is used in future work efforts or any follow on design work activity, a complete confirmation of the information contained herein should be performed prior to any such use.

(d) GTP has no responsibility for the use of this information not under its direct control.

Substructure Design Input calculations are included for bent 2.

A	As per GDOT's termination for convenience direction	5	5	JCR			11/30/09
NO.	REASON FOR REVISION	TOTAL NO. OF SHEETS	LAST SHEET NO.	BY	CHECKED	APPROVED/ ACCEPTED	DATE
RECORD OF REVISIONS							

CALCULATION SHEET

PROJECT: I-75 / I-575 NORTHWEST CORRIDOR
JOB NUMBER NH000-0575-01(028)
CALC NO. BR#37

SUBJECT: Bent Design Input - Bent 2
BY: JCR DATE: 11/30/2009

SHEET NO.
SHEET REV.

Sufficient sample calculations representative of the scope and conditions in the design calculation were performed and the results compared to demonstrate the computer program adequacy.

BRIDGE: I-575 over Big Shanty Road
COUNTY: CHEROKEE
P.J. NO: 713640
PROJECT: NH000-0575-01(028)

J.B. TRIMBLE, INC.
JBT

JOB NO: 31-6036
DESIGNED BY: SHG
DATE: 10/24/2009

PSC 10/26/09

PIER DESIGN CALCULATIONS

BENT 2

GENERAL REQUIREMENTS

Live Load cases:	See GDOT Program BRLLCA		
Skew Angle:	80.70	* FROM CL BRIDGE	
	9.3	* FROM CL BENT	
Concrete Strength:	3500	psi	
Rebar Strength:	60000	psi	
Ec =	3587	ksi	AASHTO 8.7.1
Es =	29000	ksi	AASHTO 8.7.2
Allowable Steel Stress:	24000	psi	AASHTO 8.15.2.2
n = Ec/Es =	8		AASHTO 8.15.3.4
Cap Bar size:	11	#	
Stirup Size:	5	#	
Maximum bars / row in cap:	10	bars	
Column Steel Ratios:	1	% min.	
	8	% max.	
Edge of Column to main rebar:	3.135	in.	

Impact Factor		Length (ft)	Impact
LEFT SPAN		41.00	1.300
RIGHT SPAN		80.00	1.244
Avg. Impact =			1.27

Soil Weight 0.120 kcf

Columns: TYPE S (S-SQUARE or RECTANGULAR, C-CIRCULAR, P-PILES)

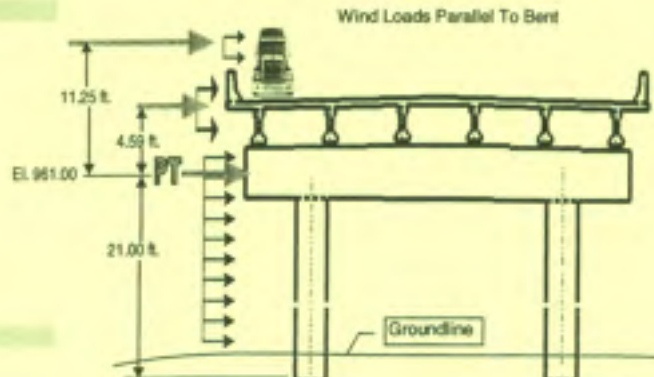
Pile Spacing: 0.00 ft MIN 0 ft MAX
0.00 ft EMBED 0 ft EDGE

Pile Capacity: TYPE 14 X 73 STEEL HP
ALLOWABLE LOAD 192 KIPS = 96 TONS
UPLIFT 0 KIPS =

WIND ON SUPERSTRUCTURE

AASHTO 3.15.2.1.1

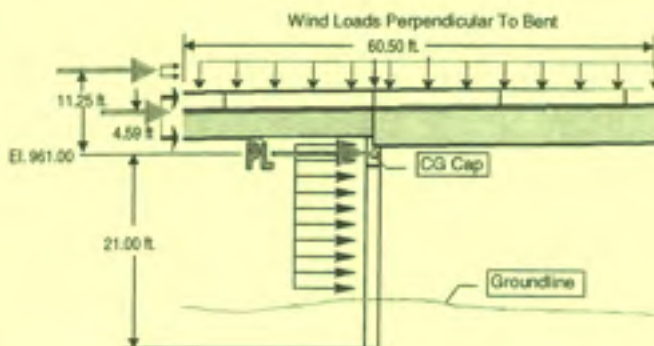
	Left Span	Right Span	
Parapet Height =	32 in.	32 in.	
Beam Height =	30 in.	34 in.	
T' or Y' Dimension =	9.5 in.	9.5 in.	
Beam + Coping + Slab =	3.29 ft.	3.63 ft.	
Total Height =	5.96 ft.	6.29 ft.	
Span Lengths =	41.00 ft.	80.00 ft.	TOTAL
Wind Force Area =	122.1 ft ²	251.7 ft ²	374 ft ²
Height of Cap =	3.00 ft.	3.00 ft.	
Wind Force Arm =	4.58 ft.		



WIND ON SUBSTRUCTURE

AASHTO 3.15.2.2

Wind Force =	0.040	kcf	PARA. & PERP.
Length of Cap =	38.00	ft.	
Width of Cap =	3.00	ft.	
CG of Cap ELEV =	961.00		
Ground Line ELEV =	942.00		
100 YR Scour ELEV =	0.00		
Depth to Point of Fixity =	2.00		
Pt. of Fixity ELEV =	940.00		
Bot. Cap to Pt. of Fixity =	19.50	ft.	
Design Height of Column =	21.00	ft.	CG Cap to Pt. of Fixity
Exposed Height of Column =	17.50	ft.	
Width of Column =	3.00	ft.	
Depth of Column =	3.00	ft.	
No. of Columns =	2	columns	
	PARA.	PERP.	
M _{cap} =	7.56	95.76	k-ft.
M _{col} =	22.58	45.15	k-ft.
M _{total} =	30.14	140.91	k-ft.
	PT = 1.44	PL = 6.71	kips



PIER DESIGN CALCULATIONS

BENT 2

WIND ON LIVE LOAD

AASHTO 3.15.2.1.2

Length = 60.50 ft.
APT = APL = 11.13 ft. Use \rightarrow 11.25 ft.

TRACTION FORCE For One Lane

AASHTO 3.8

LF = 0.00 k

TEMPERATURE FORCE

AASHTO 3.16

Friction Force due to Temperature:

$$\Delta = \text{Temp. Deflection} = \text{ALPHA} \times \text{Length} \times \text{Change in Temp.}$$

$T_{\text{MAX}} = 30$ ° $T_{\text{MIN}} = 40$ ° (Fahrenheit)
Material (C or S): C ALPHA = 0.000006 / ° (Fahrenheit)

$$\text{Force in Pad} = F_s = [G \times L \times W \times \text{Deflection}] / (\text{Telas})$$

	LEFT	RIGHT	ft
Expansion Length =	41.00	0.00	
$\Delta =$	0.118	0.000	in
G = Shear Modulus of Pad =	200	200	psi
L = Length of Pad =	10.50	10.50	in
W = Width of Pad =	12.00	12.00	in
Telas = Bearing Elastomer Depth =	4.250	4.250	in
$F_s =$	0.70	0.00	KIPS /pad
No. of Beams =	5	5	
Total Temperature Force =	3.50	0.00	kips @ top of seat
	3.75	0.00	kips @ center of cap
$P_L =$	3.70	0.00	kips
$P_T =$	0.61	0.00	kips
Difference =	$P_L = 3.70$	kips	AT CL CAP
	$P_T = 0.61$	kips	AT CL CAP
	$P_L = 3.97$	kips	AT CL CAP \rightarrow
	$P_T = 0.65$	kips	AT CL CAP

Use Total Lateral Force
= PL + Equiv. Lateral Force from MDL
due to eccentricity

Expansion of Concrete Cap = 0.00018 in/in
Contraction of Concrete Cap = 0.00044 in/in which includes 0.0002 for creep

STREAM FORCE

AASHTO 3.18.1

100 yr Flood ELEV. = 0 ft.
Point of Floty = 21.00 ft.
Bottom of Stream ELEV = 942.00 ft.
PL of Floty ELEV = 940.00
 $V_{\text{FLOD}} = 0$ FPS @ 100 yr. Flood
K = 1.4 for square ended piers
 $P_{\text{FLOD}} = K \times (V_{\text{FLOD}})^2 = 0.00$ psf
 $P_{\text{MAX}} = 2 \times P_{\text{FLOD}} = 0.00$ psf
Piers Aligned with stream flow:
 $P_s = 0.000$ kips
M = 0.00 k-ft.
 $P_{\text{CL CAP}} = 0.000$ k

AASHTO Eq. (3-4)

BRIDGE: I-575 over Big Shanty Road
COUNTY: CHEROKEE
P.I. NO: 713640
PROJECT: NH000-0575-01(028)



JOB NO: 31-6036
DESIGNED BY: SHG
DATE: 10/24/2009

PIER DESIGN CALCULATIONS

BENT 2

DEAD LOADS

AASHTO 3.3

LENGTH = 38.00 feet
STEP HT = 0.000 ft
STEP WT = 1.417 ft
SKEW = 80.70 degrees
SPAN 2

BEAM	BEAM SPACING	DISTANCE BETWEEN	DISTANCE ALONG	R d	Addl DL	DL
1		1.774	1.774	37.5	0.00	37.5
2	8.500	8.613	10.387	37.5	0.00	37.5
3	8.500	8.613	19.000	37.5	0.00	37.5
4	8.500	8.613	27.613	37.5	0.00	37.5
5	8.500	8.613	36.226	37.5	0.0	37.5
		1.774	38.000			

TOTAL 187.4
CL Brg to CL Bent = 0.750

SPAN 3

BEAM	BEAM SPACING	DISTANCE BETWEEN	DISTANCE ALONG	R d	Addl DL	DL
1		1.774	1.774	74.8	0.00	74.8
2	8.500	8.613	10.387	74.8	0.0	74.8
3	8.500	8.613	19.000	74.8	0.0	74.8
4	8.500	8.613	27.613	74.8	0.0	74.8
5	8.500	8.613	36.226	74.8	0.00	74.8
		1.774	38.000			

TOTAL 374.2
CL Brg to CL Bent = 0.750
561.7

COMBINED LOADS

COLUMN = 1.500 FT - checking 14 points on column

	POINT	MEMBER		DISTANCE ALONG	R d	Addl DL	DL	CHECK POINT
7.50		G1 1	5.726	1.774	112.3	0.0	112.3	1
		EC 1	4.976	6.750				2
23.00		EC 2	0.750	8.250				3
		G2 2	2.137	10.387	112.3	0.0	112.3	4
		CHECK 2	4.307	14.693				5
		G3 2	4.307	19.000	112.3	0.0	112.3	6
		CHECK 2	4.307	23.307				7
		G4 2	4.307	27.613	112.3	0.0	112.3	8
		EC 2	2.137	29.750				9
7.50		EC 3	0.750	31.250				10
		G5 3	4.976	36.226	112.3	0.0	112.3	11
				1.774				
			38.000					

ADDITIONAL DL MOMENT DUE TO ECCENTRICITY:

$M_{DL} = 140.07$ KIP-FT

(EQUIV. LONG FORCE) $F_{EL} = M_{DL} / P_{DESIGN OF COLUMN} = 6.67$ KIP

(TOTAL LONG FORCE) $F_L = F_{EL} + P_{L TEMP} = 10.64$ KIP

LIVE LOADS:

AASHTO 3.4

	LEFT	RIGHT	
Span Lengths =	41.00	80.00	ft
LIVE LOAD REACTION	63.67	64.72	KIPS
			AXLE LOAD NO IMPACT
			LANE LOAD NO IMPACT
AVERAGE IMPACT	1.27		
P-LOAD FOR BRLLCA INPUT	41		KIPS

VERIFY !!!

CALCULATION COVER SHEET

PROJECT I-75 / I-575 NORTHWEST CORRIDOR	JOB NO. NH000-0575-01(028)	CALC NO. BR#37	SHEET 1
SUBJECT Live Load Case Output		DISCIPLINE STRUCTURAL	

CALCULATION STATUS DESIGNATION	PRELIMINARY <input type="checkbox"/>	CONFIRMED <input type="checkbox"/>	SUPSEDED <input type="checkbox"/>	VOIDED <input type="checkbox"/>	INCOMPLETE <input checked="" type="checkbox"/>
---	---	---------------------------------------	--------------------------------------	------------------------------------	---

COMPUTER PROGRAM/TYPE	SCP <input checked="" type="radio"/> YES <input type="radio"/> NO	MAINFRAME <input type="radio"/>	PC <input checked="" type="radio"/>	PROGRAM GDOT BRLLCA	VERSION/RELEASE NO. 06/26/2008
----------------------------------	--	--	--	-------------------------------	---------------------------------------

Note 1: Georgia Department of Transportation (GDOT) terminated Contract Number TOURDPPI60072 for its convenience the completion of all work under that contract and directed that the work with respect to these calculations be discontinued.

(a) These calculations were not completed at the time of GDOT's direction and the information contained herein is not and/or has not been fully verified or checked. These calculations are a work-in-progress and are presented only as such.

(b) Any user is cautioned that the use of these calculations and any related information or calculations, without access to factors and without proper regard for their purpose, could lead to erroneous conclusions.

(c) If any such calculations or any information contained herein is used in future work efforts or any follow on design work a complete confirmation of the information contained herein should be performed prior to any such use.

(d) GTP has no responsibility for the use of this information not under its direct control.

Live Load Case output is included for bent 2.

A	As per GDOT's termination for convenience direction	3	3	JCR			11/30/09
NO.	REASON FOR REVISION	TOTAL NO. OF SHEETS	LAST SHEET NO.	BY	CHECKED	APPROVED/ ACCEPTED	DATE
RECORD OF REVISIONS							

CALCULATION SHEET

PROJECT: I-75 / I-575 NORTHWEST CORRIDOR
JOB NUMBER NH000-0575-01(028)
CALC NO. BR#37

SUBJECT: Live Load Case Output - Bent 2
BY: JCR DATE: 11/30/2009

SHEET NO.
SHEET REV.

Sufficient sample calculations representative of the scope and conditions in the design calculation were performed and the results compared to demonstrate the computer program adequacy.

18-OCT-09
11:43:02

GEORGIA DEPARTMENT OF TRANSPORTATION
PRECONSTRUCTION DIVISION - OFFICE OF BRIDGE & STRUCTURAL DESIGN
SUMMARY OF THE LIVE LOAD CASE PROGRAM
REVISED: JUNE 26, 2008

PROB. NO.

I-575 OVER BIG SHANTY ROAD

[illegible]

CALCULATION COVER SHEET

PROJECT	JOB NO.	CALC NO.	SHEET
I-75 / I-575 NORTHWEST CORRIDOR	NH000-0575-01(028)	BR#37	1
SUBJECT	DISCIPLINE		
Intermediate Bent Design Output	STRUCTURAL		

CALCULATION STATUS DESIGNATION	PRELIMINARY	CONFIRMED	SUPSEDED	VOIDED	INCOMPLETE
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

COMPUTER PROGRAM/TYPE	SCP <input checked="" type="radio"/> YES <input type="radio"/> NO	MAINFRAME <input type="radio"/>	PC <input checked="" type="radio"/>	PROGRAM GDOT BRPIER	VERSION/RELEASE NO. 06/26/2008
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Note 1: Georgia Department of Transportation (GDOT) terminated Contract Number TOURDPP160072 for its convenience the completion of all work under that contract and directed that the work with respect to these calculations be discontinued.

- (a) These calculations were not completed at the time of GDOT's direction and the information contained herein is not and/or has not been fully verified or checked. These calculations are a work-in-progress and are presented only as such.
- (b) Any user is cautioned that the use of these calculations and any related information or calculations, without access to factors and without proper regard for their purpose, could lead to erroneous conclusions.
- (c) If any such calculations or any information contained herein is used in future work efforts or any follow on design work a complete confirmation of the information contained herein should be performed prior to any such use.
- (d) GTP has no responsibility for the use of this information not under its direct control.

Intermediate bent design output is included for bent 2.

A	As per GDOT's termination for convenience direction	6	6	JCR			11/30/09
NO.	REASON FOR REVISION	TOTAL NO. OF SHEETS	LAST SHEET NO.	BY	CHECKED	APPROVED/ ACCEPTED	DATE
RECORD OF REVISIONS							

CALCULATION SHEET

PROJECT: I-75 / I-575 NORTHWEST CORRIDOR
JOB NUMBER NH000-0575-01(028)
CALC NO. BR#37

SUBJECT: Bent Design Output - Bent 2
BY: JCR DATE: 11/30/2009

SHEET NO.
SHEET REV.

Sufficient sample calculations representative of the scope and conditions in the design calculation were performed and the results compared to demonstrate the computer program adequacy.

DESIGN DATA

DESIGN NO.	NO.	NO.	SKEW ANG	F'C	PC	N	FY	FS	EC	ES	CONC.	Z	* * *	CAP REINFORCING STEEL	* * *	CAP						
OPTIONS CAN COL LLC	D	M	S	PSI	PSI		PSI	PSI	KSI	KSI	STRAIN FACT	MAIN STR MAX	MAX MIN	MIN TOP	MIN DEPTH BOT							
												SIZE	SIZE TOP	BOT SIZE	NO. CL.	S.F INCH. CL.						
D D D L 2	2	13	9-18-00	3500.	1400.	8.	60000.	24000.	3567.	29000.	0.0030	170.	11	5	10	13	6	4	2.00	4.00	3.00	2.00

COLUMN REINFORCING STEEL	R	KL	DC	OF	CM	BD1	BD2	IMPACT	SOIL WT	ALL.S.P.	MIN	MAX	EDGE	PILE	RERAR	ALL.PILE	ALL.PILE	I
MIN.P MAX.P CL.SP. CLEAR	MODE	COEF						%	KCF	KSF	PL SP	PL SP	DIST	DEPTH	CLEAR	CAPACITY	UPLIFT	P
1.00 8.00 2.25 2.625	2	2.00	0.00	0.90	0.00	1.00	0.00	27.00	0.120	0.000	3.00	5.00	1.500	1.000	1.000	192.000	0.000	

CAP DATA

CN	C	L	A	DE	BC	BE	DH	LH	XB1	XB2	XB3	XB4	XB5	XB6	XB7	XB8
11	C	7.500	0.000	3.000	3.000	0.000	0.000	0.000	5.726	4.976						
12	C	23.000	0.000	3.000	3.000		0.000	0.000	0.750	2.137	4.307	4.307	4.307	4.307	2.137	
13	C	7.500	0.000	3.000	3.000	0.000	0.000	0.000	0.750	4.976						

COLUMN DATA

CN	P	I	T	S	HT	A	DT	BT	DS	BB	DL	FLEX	MD	NB	SZ	ND	NB	SZ	MD	NB	SZ	ND	NB	SZ	SLOPE	EP	AP
21	0	C	T		21,000	0.000	3,000	3,000	0.000	0.000	1,500	0.000	2	4	11	0	0	0	99	99	11	0	0	0	0.000	0.000	0.000
22	0	C	T		21,000	0.000	3,000	3,000	0.000	0.000	1,500	0.000	2	4	11	0	0	0	99	99	11	0	0	0	0.000	0.000	0.000

FOOTING DATA

CN	S/P	B	D	T	DEL.B	DEL.D	DEL.T	R.B/D	R.D/B	S.WT.	NP	SYM.	BP	DP	SET.
31	F	6.000	6.000	3.500	0.500	0.500	0.500	0.000	0.000	0.000	4	1	0.000	0.000	0.000
32	F	6.000	6.000	3.500	0.500	0.500	0.500	0.000	0.000	0.000	4	1	0.000	0.000	0.000

GROUP 11 WIND

SUPERSTRUCTURE AREA*STD.		WIND ON SUPERSTRUCTURE INTENSITIES										* WIND FORCE ARM		* WIND ON PIER		
TRANS.	LONG.	WIND	PT1	FL1	PT2	FL2	PT3	FL3	PT4	FL4	PT5	FL5	APT	APL	PT	PL
374.	374.	1	50	0	44	6	41	12	33	16	17	19	4.591	4.591	1.435	6.71

GROUP III WIND

WIND ON SUPERSTRUCTURE INTENSITIES										WIND ON LIVE LOAD INTENSITIES										LENGTHS OF LL * WIND ON LL ARMS					
STD.	* WIND ON SUPERSTRUCTURE INTENSITIES									STD.	* WIND ON LIVE LOAD INTENSITIES									* LENGTHS OF LL * WIND ON LL ARMS					
WIND	FT1	FL1	FT2	FL2	FT3	FL3	FT4	FL4	FT5	FL5	WIND	FT1	FL1	FT2	FL2	FT3	FL3	FT4	FL4	FT5	FL5	TRANS.	LONGI.	AFT	APL
	50	0	44	6	43	12	33	16	17	19	1	100	0	88	12	82	24	66	32	34	38	60.5	60.5	11.250	11.250

MISCELLANEOUS FORCES

CENTRI.		TRACTION FORCE AND ARMS		EXPANSION		SHRINKAGE		STREAM FLOW	
FT	FL	APT	APL	COEFFICIENT	COEFFICIENT	PT	PL		
0.000	3.460	11.250	11.250	0.00018000	0.00044000	0.649	10.636		

DEAD LOAD SUPERSTRUCTURE AND LIVE LOAD CASES

I.D.	NL	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12
D.L.	0	111.300	0.000	0.000	111.300	0.000	111.300	0.000	111.300	0.000	0.000	111.300	
LL 1	1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	28.941	0.000	0.000	53.058	
LL 2	2	0.000	0.000	0.000	0.000	0.000	43.411	0.000	67.529	0.000	0.000	53.058	
LL 3	3	2.411	0.000	0.000	53.058	0.000	69.941	0.000	67.529	0.000	0.000	53.058	
LL 4	1	34.970	0.000	0.000	6.029	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
LL 5	2	50.647	0.000	0.000	59.088	0.000	11.264	0.000	0.000	0.000	0.000	0.000	
LL 6	3	50.647	0.000	0.000	67.529	0.000	66.323	0.000	20.500	0.000	0.000	0.000	
LL 7	1	0.000	0.000	0.000	14.470	0.000	53.058	0.000	14.470	0.000	0.000	0.000	
LL 8	2	21.705	0.000	0.000	67.529	0.000	60.294	0.000	14.470	0.000	0.000	0.000	
LL 9	3	21.705	0.000	0.000	67.529	0.000	67.529	0.000	67.529	0.000	0.000	21.705	
LL10	2	1.808	0.000	0.000	53.058	0.000	69.338	0.000	53.058	0.000	0.000	0.000	
LL11	3	47.727	0.000	0.000	72.955	0.000	69.338	0.000	39.794	0.000	0.000	47.727	
LL12	2	34.970	0.000	0.000	6.029	0.000	0.000	0.000	28.941	0.000	0.000	53.058	
	3	34.970	0.000	0.000	6.029	0.000	43.411	0.000	67.529	0.000	0.000	34.970	

MEMBER PROPERTIES

COLUMN PROPERTIES

CN	KT KTM	COTB COBT	COTBM COBTM	TLR TRL	TRC TCR	TLC TCL	DFC DFL	KL PDF	PKBR PKUBR	PCBR PCUBR	PCL PLD	UPWT UPMB	EITTB EILTB	PSIT PSIB	ROTB RGL
	664107.4	0.5000	0.5000	0.4457	1.0000	0.5543	0.5543	0.026239	13.4	90953.5	6423.2	47436.2	189773.9	0.8	10.7
	664107.4	0.5000	0.2587	0.0000	1.0000	0.0000	0.0000	0.5000	26.3	23754.3	19.5	47436.2	189773.9	0.0	10.7
2	664107.4	0.5000	0.5000	0.0000	0.5543	1.0000	0.5543	0.026239	13.4	90953.5	6423.2	47436.2	189773.9	0.8	10.7
	664107.4	0.5000	0.2587	0.4457	0.0000	1.0000	0.4457	0.5000	26.3	23754.3	19.5	47436.2	189773.9	0.0	10.7

CAP PROPERTIES

CN	CO K	KML KMR	COMLR COMRL	PMWT UFEM	PMLP1 PMRP1	PMLP2 PMRP2	PMLP3 PMRP3	PMLP4 PMRP4	PMLP5 PMRP5	PMLP6 PMRP6	PMLP7 PMRP7	PMLP8 PMRP8
2	0.5000	534009.3	0.2968	59.5125	0.7019	2.2077	3.3975	2.8747	1.5457	0.3165	0.0235	
	606358.9	534009.3	0.2968	39545.1	0.0237	0.3169	1.5463	2.8753	3.3974	2.2066	0.7001	

COLUMN MOMENTS (KIP-FEET), SHEARS (KIPS), REACTIONS (KIPS)

LOAD	COL	PC	MT	V	TRANSVERSE					MT	LONGITUDINAL		
					MR	RF	ML	MR	*		V	MB	MF
UNIT P.LAT CL.CAP	1	0.386	4.440	0.500	6.060	0.386	0.000	-4.440	0.750	0.500	10.500	10.500	
	2	-0.386	4.440	0.500	6.060	-0.386	-4.440	0.000	0.750	0.500	10.500	10.500	
EXPANSION OF CAP	1	0.000	30.777	4.536	64.485	0.000	0.000	-30.777	0.000	0.000	0.000	0.000	0.000
	2	0.000	-30.777	-4.536	-64.485	0.000	30.777	0.000	0.000	0.000	0.000	0.000	0.000
SHRINKAGE OF CAP	1	0.000	-75.232	-11.089	-157.630	0.000	0.000	75.232	0.000	0.000	0.000	0.000	0.000
	2	0.000	75.232	11.089	157.630	0.000	-75.232	0.000	0.000	0.000	0.000	0.000	0.000
DEAD LOAD TOTAL	1	303.886	-10.205	-0.729	-5.105	330.211	675.273	-665.068	0.000	0.000	0.000	0.000	0.000
	2	330.211 303.914 330.239	10.208	0.729	5.102	330.239	665.065	-675.273	0.000	0.000	0.000	0.000	0.000
STREAM FLOW	1	0.251	2.881	0.324	3.933	0.251	0.000	-2.881	7.977	5.318	111.678	111.678	
	2	-0.251	2.881	0.324	3.933	-0.251	-2.881	0.000	7.977	5.318	111.678	111.678	
TRAC. FORCE 1 LN	1	0.489	2.482	0.280	3.389	0.489	0.000	-2.482	-21.768	-1.707	-55.059	-55.059	
	2	-0.489	2.482	0.280	3.389	-0.489	-2.482	0.000	-21.768	-1.707	-55.059	-55.059	
D ON SUBSTR.	1	0.554	6.371	0.717	8.697	0.554	0.000	-6.371	-5.033	-3.355	-70.455	-70.455	
	2	-0.554	6.371	0.717	8.697	-0.554	-6.371	0.000	-5.033	-3.355	-70.455	-70.455	
GROUP 2 WIND 1 1	1	11.362	88.300	9.945	120.537	11.362	0.000	-88.300	4.171	-1.844	-31.787	-31.787	
	2	-11.362	88.300	9.945	120.537	-11.362	-88.300	0.000	4.171	-1.844	-31.787	-31.787	
GROUP 2 WIND 1 2	1	11.362	88.300	9.945	120.537	11.362	0.000	-88.300	14.236	4.866	109.123	109.123	
	2	-11.362	88.300	9.945	120.537	-11.362	-88.300	0.000	14.236	4.866	109.123	109.123	
GROUP 2 WIND 2 1	1	10.277	80.079	9.019	109.314	10.277	0.000	-80.079	-3.678	-3.133	-64.763	-64.763	
	2	-10.277	80.079	9.019	109.314	-10.277	-80.079	0.000	-3.678	-3.133	-64.763	-64.763	
GROUP 2 WIND 2 2	1	9.853	76.859	8.656	104.918	9.853	0.000	-76.859	19.876	5.792	132.818	132.818	
	2	-9.853	76.859	8.656	104.918	-9.853	-76.859	0.000	19.876	5.792	132.818	132.818	
GROUP 2 WIND 3 1	1	9.841	76.773	8.646	104.801	9.841	0.000	-76.773	-10.974	-4.330	-95.419	-95.419	
	2	-9.841	76.773	8.646	104.801	-9.841	-76.773	0.000	-10.974	-4.330	-95.419	-95.419	
GROUP 2 WIND 3 2	1	8.992	70.333	7.921	96.010	8.992	0.000	-70.333	26.068	6.809	158.834	158.834	
	2	-8.992	70.333	7.921	96.010	-8.992	-70.333	0.000	26.068	6.809	158.834	158.834	
GROUP 2 WIND 4 1	1	8.254	64.737	7.291	88.372	8.254	0.000	-64.737	-16.943	-5.310	-120.496	-120.496	
	2	-8.254	64.737	7.291	88.372	-8.254	-64.737	0.000	-16.943	-5.310	-120.496	-120.496	
GROUP 2 WIND 4 2	1	7.121	56.151	6.324	76.650	7.121	0.000	-56.151	29.092	7.305	171.538	171.538	
	2	-7.121	56.151	6.324	76.650	-7.121	-56.151	0.000	29.092	7.305	171.538	171.538	
GROUP 2 WIND 5 1	1	4.901	39.325	4.429	53.682	4.901	0.000	-39.325	-23.260	-6.348	-147.038	-147.038	
	2	-4.901	39.325	4.429	53.682	-4.901	-39.325	0.000	-23.260	-6.348	-147.038	-147.038	
GROUP 2 WIND 5 2	1	3.556	29.129	3.281	39.763	3.556	0.000	-29.129	29.519	7.375	173.332	173.332	
	2	-3.556	29.129	3.281	39.763	-3.556	-29.129	0.000	29.519	7.375	173.332	173.332	
GROUP 3 WIND 1 1	1	8.634	52.997	5.969	72.344	8.634	0.000	-52.997	7.484	-0.064	6.229	6.229	
	2	-8.634	52.997	5.969	72.344	-8.634	-52.997	0.000	7.484	-0.064	6.229	6.229	
GROUP 3 WIND 1 2	1	8.634	52.997	5.969	72.344	8.634	0.000	-52.997	10.504	1.949	48.502	48.502	
	2	-8.634	52.997	5.969	72.344	-8.634	-52.997	0.000	10.504	1.949	48.502	48.502	
JP 3 WIND 2 1	1	7.784	47.870	5.391	65.347	7.784	0.000	-47.870	-0.186	-0.868	-17.108	-17.108	
	2	-7.784	47.870	5.391	65.347	-7.784	-47.870	0.000	-0.186	-0.868	-17.108	-17.108	
GROUP 3 WIND 2 2	1	7.451	45.862	5.165	62.606	7.451	0.000	-45.862	16.015	2.526	65.272	65.272	
	2	-7.451	45.862	5.165	62.606	-7.451	-45.862	0.000	16.015	2.526	65.272	65.272	

COLUMN MOMENTS (KIP-FeET), SHEARS (KIPS), REACTIONS (KIPS)

LOAD	COL.	PC	MT	TRANSVERSE					* MR	MT	LONGITUDINAL		
				V	MB	RF	ML				V	MB	MF
UP 3 WIND 1 1	1	7.442	48.809	5.159	62.533	7.442	0.000	-48.809	-7.316	-1.615	-38.804	-38.804	
	2	-7.442	48.809	5.159	62.533	-7.442	-48.809	0.000	-7.316	-1.615	-38.804	-38.804	
GROUP 3 WIND 3 2	1	6.777	41.793	4.707	57.051	6.777	0.000	-41.793	22.066	3.160	83.684	83.684	
	2	-6.777	41.793	4.707	57.051	-6.777	-41.793	0.000	22.066	3.160	83.684	83.684	
GROUP 3 WIND 4 1	1	6.199	38.305	4.314	52.289	6.199	0.000	-38.305	-13.149	-2.226	-56.551	-56.551	
	2	-6.199	38.305	4.314	52.289	-6.199	-38.305	0.000	-13.149	-2.226	-56.551	-56.551	
GROUP 3 WIND 4 2	1	5.311	32.951	3.711	44.980	5.311	0.000	-32.951	25.021	3.469	92.674	92.674	
	2	-5.311	32.951	3.711	44.980	-5.311	-32.951	0.000	25.021	3.469	92.674	92.674	
GROUP 3 WIND 5 1	1	3.572	22.459	2.529	30.659	3.572	0.000	-22.459	-19.322	-2.872	-75.335	-75.335	
	2	-3.572	22.459	2.529	30.659	-3.572	-22.459	0.000	-19.322	-2.872	-75.335	-75.335	
GROUP 3 WIND 5 2	1	2.518	16.101	1.813	21.980	2.518	0.000	-16.101	25.438	3.513	93.944	93.944	
	2	-2.518	16.101	1.813	21.980	-2.518	-16.101	0.000	25.438	3.513	93.944	93.944	
LIVE LOAD LL 1	1	-7.907	-59.999	-5.659	-58.839	-7.907	0.000	60.000	0.000	0.000	0.000	0.000	
	2	89.906	98.452	5.659	20.387	89.906	205.358	-303.810	0.000	0.000	0.000	0.000	
LIVE LOAD LL 2	1	18.147	53.480	2.849	6.347	18.147	0.000	-53.480	0.000	0.000	0.000	0.000	
	2	145.851	-26.290	-2.849	-33.538	145.851	330.100	-303.810	0.000	0.000	0.000	0.000	
LIVE LOAD LL 3	1	73.261	138.391	8.582	41.829	73.261	12.425	-150.816	0.000	0.000	0.000	0.000	
	2	148.136	-101.902	-8.582	-78.318	148.136	375.331	-273.429	0.000	0.000	0.000	0.000	
LIVE LOAD LL 4	1	47.681	-78.088	-4.537	-17.182	47.681	200.238	-122.150	0.000	0.000	0.000	0.000	
	2	-6.682	48.939	4.537	46.331	-6.682	-48.939	0.000	0.000	0.000	0.000	0.000	
LIVE LOAD LL 5	1	120.362	-35.923	-1.583	2.679	120.362	290.005	-254.081	0.000	0.000	0.000	0.000	
	2	2.637	8.403	1.583	24.842	2.637	-8.403	0.000	0.000	0.000	0.000	0.000	
LIVE LOAD LL 6	1	141.020	82.907	6.920	62.407	141.020	261.004	-343.912	0.000	0.000	0.000	0.000	
	2	43.479	-110.845	-6.920	-34.469	43.479	110.845	0.000	0.000	0.000	0.000	0.000	
LIVE LOAD LL 7	1	40.995	129.803	9.292	64.903	40.995	0.000	-129.803	0.000	0.000	0.000	0.000	
	2	41.003	-129.805	-9.292	-64.901	41.003	129.805	0.000	0.000	0.000	0.000	0.000	
3 LOAD LL 8	1	117.960	145.556	10.529	75.554	117.960	124.283	-269.839	0.000	0.000	0.000	0.000	
	2	46.038	-149.257	-10.529	-71.853	46.038	149.257	0.000	0.000	0.000	0.000	0.000	
LIVE LOAD LL 9	1	110.691	148.483	10.606	74.240	110.691	111.855	-260.338	0.000	0.000	0.000	0.000	
	2	110.707	-148.481	-10.606	-74.242	110.707	260.336	-111.855	0.000	0.000	0.000	0.000	
LIVE LOAD LL10	1	89.908	224.451	16.089	113.424	89.908	10.353	-234.804	0.000	0.000	0.000	0.000	
	2	87.354	-226.049	-16.089	-111.826	87.354	226.049	0.000	0.000	0.000	0.000	0.000	
LIVE LOAD LL11	1	136.443	46.593	3.017	16.764	136.443	245.956	-292.549	0.000	0.000	0.000	0.000	
	2	113.344	-37.883	-3.017	-25.474	113.344	283.839	-245.956	0.000	0.000	0.000	0.000	
LIVE LOAD LL12	1	39.774	-138.088	-10.196	-76.021	39.774	200.238	-62.151	0.000	0.000	0.000	0.000	
	2	83.224	147.391	10.196	66.718	83.224	156.419	-303.810	0.000	0.000	0.000	0.000	
LIVE LOAD LL13	1	62.672	2.658	0.767	33.443	62.672	180.214	-182.872	0.000	0.000	0.000	0.000	
	2	105.546	-18.809	-0.767	2.709	105.546	199.024	-180.214	0.000	0.000	0.000	0.000	

CAP ANALYSIS AND DESIGN DATA
CAP MOMENTS AND SHEARS

POINT	D.L. TOT.	MOMENTS (KIP-FeET)						SHEARS (KIPS)					
		G1 MAX. +	G1 MAX. -	G2 MAX. +	G2 MAX. -	G3 MAX. +	G3 MAX. -	DL T. LT	DL T. RT	G1 + LT	G1 + RT	G1 - LT	G1 - RT
P 1	-2.762	-2.762	-2.762	-2.762	-2.762	-2.762	-2.762	-3.113	-147.803	-3.113	-147.803	-3.113	-257.758
P 2	-759.958	-759.958	-1307.093	-759.958	-759.958	-759.958	-1087.584	-156.536	-156.536	-156.536	-156.536	-264.491	-266.491
C 1L	-877.854	-877.854	-1507.454	-877.854	-877.854	-877.854	-1254.860	-157.852		-157.852		-267.807	
C 1R	-864.588	-734.329	-1614.966	-749.798	-983.124	-714.466	-1393.028		237.199		446.493		220.033
P 3	-687.182	-569.798	-1281.920	-579.879	-797.988	-549.474	-1117.265	235.883	235.883	445.177	445.177	218.716	218.716
P 4	-187.109	-68.956	-391.381	-101.136	-275.887	-58.233	-368.679	232.132	87.442	441.427	163.844	214.966	70.276
P 5	173.227	543.310	48.783	216.208	128.843	423.047	71.141	79.883	79.883	156.285	156.285	62.717	62.717
P 6	501.006	1198.750	373.274	501.016	500.996	918.824	424.513	72.325	-72.365	148.726	-57.533	55.158	-158.355
P 7	173.050	551.512	31.945	217.455	130.049	428.464	61.477	-70.924	-79.924	-65.092	-65.092	-165.914	-165.914
P 8	-187.462	-120.261	-402.502	-98.663	-273.454	-92.066	-370.257	-87.483	-232.173	-72.651	-217.341	-173.472	-450.107
P 9	-687.623	-588.726	-1339.452	-576.797	-794.947	-559.567	-1150.500	-235.923	-235.923	-221.091	-221.091	-453.858	-453.858
C 2L	-864.584	-754.592	-1679.427	-746.048	-979.374	-725.095	-1430.123	-237.236		-222.404		-455.171	
C 2R	-877.854	-877.854	-1537.426	-877.854	-877.854	-877.854	-1272.807		157.852		273.041		157.852
P10	-759.958	-759.958	-1333.139	-759.958	-759.958	-759.958	-1103.180	156.536	156.536	271.725	271.725	156.536	156.536
	-2.762	-2.762	-2.762	-2.762	-2.762	-2.762	-2.762	147.803	3.113	262.992	3.113	147.803	3.113

CALCULATION COVER SHEET

PROJECT I-75 / I-575 NORTHWEST CORRIDOR	JOB NO. NH000-0575-01(028)	CALC NO. BR#37	SHEET 1
SUBJECT References for Design		DISCIPLINE STRUCTURAL	

CALCULATION STATUS DESIGNATION	PRELIMINARY <input type="checkbox"/>	CONFIRMED <input type="checkbox"/>	SUPSEDED <input type="checkbox"/>	VOIDED <input type="checkbox"/>	INCOMPLETE <input checked="" type="checkbox"/>
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COMPUTER PROGRAM/TYPE	SCP <input type="radio"/> YES <input type="radio"/> NO	MAINFRAME <input type="radio"/>	PC <input type="radio"/>	PROGRAM NONE	VERSION/RELEASE NO.
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Note 1: Georgia Department of Transportation (GDOT) terminated Contract Number TOURDPPI60072 for its convenience the completion of all work under that contract and directed that the work with respect to these calculations be discontinued.

(a) These calculations were not completed at the time of GDOT's direction and the information contained herein is not and/or has not been fully verified or checked. These calculations are a work-in-progress and are presented only as such.

(b) Any user is cautioned that the use of these calculations and any related information or calculations, without access to factors and without proper regard for their purpose, could lead to erroneous conclusions.

(c) If any such calculations or any information contained herein is used in future work efforts or any follow on design work a complete confirmation of the information contained herein should be performed prior to any such use.

(d) GTP has no responsibility for the use of this information not under its direct control.

Included Reference Information:

Roadway information
 Bridge Survey Shots
 Existing Bridge Plans
 Existing Bridge Maintenance Reports
 BFI

A	As per GDOT's termination for convenience direction	91	91	JCR			11/30/09
NO.	REASON FOR REVISION	TOTAL NO. OF SHEETS	LAST SHEET NO.	BY	CHECKED	APPROVED/ ACCEPTED	DATE

RECORD OF REVISIONS

CALCULATION SHEET

PROJECT: I-75 / I-575 NORTHWEST CORRIDOR
JOB NUMBER NH000-0575-01(028)
CALC NO. BR#37

SUBJECT: Roadway Information
BY: JCR DATE: 11/30/2009

SHEET NO.
SHEET REV.

Chord: 4414.0315
 Middle Ordinate: 211.8886
 External: 215.8310
 Tangent Direction: N 12°29'10.6370" E
 Radial Direction: S 77°30'49.3629" E
 Chord Direction: N 1°31'05.9930" E
 Radial Direction: N 80°33'01.3493" E
 Tangent Direction: N 9°26'58.6508" W

Element: Linear

PT	()	1113+37.2862	1463173.5218	2177673.0317
PI	()	1114+55.3595	1463289.9928	2177653.6464
Tangential Direction:		N 9°26'58.6508" W		
Tangential Length:		118.0733		

Element: Linear

PI	()	1114+55.3595	1463289.9928	2177653.6464
PI	()	1121+71.1302	1463995.7223	2177534.1743
Tangential Direction:		N 9°36'30.3830" W		
Tangential Length:		715.7707		

Element: Linear

PI	()	1121+71.1302	1463995.7223	2177534.1743
PI	()	1124+28.9373	1464250.1979	2177492.8622
Tangential Direction:		N 9°13'15.8537" W		
Tangential Length:		257.8071		

Element: Linear

PI	()	✓ 1124+28.9373	✓ 1464250.1979	✓ 2177492.8622
PI	()	✓ 1126+81.1261	✓ 1464498.7939	✓ 2177450.4448
Tangential Direction:		N 9°40'58.7678" W ✓		
Tangential Length:		252.1889		

BR#36
 575
 2 Noorday
 South

Element: Linear

PI	()	1126+81.1261	1464498.7939	2177450.4448
PI	()	1131+56.0807	1464967.2430	2177372.1042
Tangential Direction:		N 9°29'38.2356" W		
Tangential Length:		474.9545		

Element: Linear

PI	()	✓ 1131+56.0807	✓ 1464967.2430	✓ 2177372.1042
PI	()	✓ 1153+67.4751	✓ 1467148.7660	✓ 2177009.8572
Tangential Direction:		N 9°25'41.0585" W ✓		
Tangential Length:		2211.3944		

BR#37
 575
 Big
 Sharfy

Element: Linear

PI	()	1153+67.4751	1467148.7660	2177009.8572
PI	()	1162+59.8641	1468028.9379	2176862.6992
Tangential Direction:		N 9°29'29.8448" W		
Tangential Length:		892.3889		

Element: Linear

PROJECT:	NW Corridor
COUNTY:	COBB
BRIDGE:	37
DESCRIPTION:	I-575 over Big Shanty Rd

VERTICAL GRADE DATA FOR NEW ALIGNMENT, ADJUSTED FOR SURVEY DIFF.:

PVC =	1121+44.01
PVI EL. =	945.96
G2 =	1.0500%

PVI =	1162+44.01
PVI EL. =	989.01

ELEVATION COMPARISON, ADJUSTED FOR SURVEY DIFF.

BENT 1R LEFT SIDE

Geomath Rdy EL. =	965.892
Survey EL. =	965.889
DIFFERENCE =	0.003

BENT 1R RIGHT SIDE

Geomath Rdy EL. =	965.531
Survey EL. =	965.513
DIFFERENCE =	0.018

BENT 2R LEFT SIDE

Geomath Rdy EL. =	966.318
Survey EL. =	966.350
DIFFERENCE =	-0.032

BENT 2R RIGHT SIDE

Geomath Rdy EL. =	965.967
Survey EL. =	966.008
DIFFERENCE =	-0.041

BENT 3R LEFT SIDE

Geomath Rdy EL. =	967.152
Survey EL. =	967.159
DIFFERENCE =	-0.007

BENT 3R RIGHT SIDE

Geomath Rdy EL. =	966.802
Survey EL. =	966.808
DIFFERENCE =	-0.006

BENT 4R LEFT SIDE

Geomath Rdy EL. =	967.538
Survey EL. =	967.473
DIFFERENCE =	0.065

BENT 4R RIGHT SIDE

Geomath Rdy EL. =	967.176
Survey EL. =	967.159
DIFFERENCE =	0.017

BIG SHANTY RD ALIGN.

	Station	Northing	Easting
Element: Linear			
POB ()	✓ 247+49.6578	✓ 1465828.7390	✓ 2176980.0290
PC ()	✓ 249+13.7784	1465888.2937	2177132.9631
Tangential Direction:	✓ N 68°43'24.1189" E		
Tangential Length:	164.1207		

Element: Circular			
PC ()	✓ 249+13.7784	1465888.2937	2177132.9631
PI ()	251+94.8312	1465990.2796	2177394.8591
CC ()		1464956.4544	2177495.8343
PT ()	✓ 254+61.7478	1465940.8972	2177671.5395
Radius:	1000.0000		
Delta:	31°23'46.7968" Right		
Degree of Curvature (Arc):	5°43'46.4806"		
Length:	547.9694		
Tangent:	281.0528		
Chord:	541.1393		
Middle Ordinate:	37.2996		
External:	38.7448		
Tangent Direction:	N 68°43'24.1189" E		
Radial Direction:	S 21°16'35.8811" E		
Chord Direction:	N 84°25'17.5173" E		
Radial Direction:	S 10°07'10.9157" W		
Tangent Direction:	S 79°52'49.0844" E		

Element: Linear			
PT ()	254+61.7478	1465940.8972	2177671.5395
POE ()	258+50.8212	1465872.5350	2178054.5600
Tangential Direction:	S 79°52'49.0844" E		
Tangential Length:	389.0734		

Alignment Name: XR 1235+00 Bells Ferry

Alignment Description: I-575 Bells Ferry Road

Alignment Style: MAIN_P_SIDECL

	Station	Northing	Easting
Element: Linear			
POB ()	286+16.0615	1475623.9135	2178443.0054
PC ()	286+21.1863	1475619.1440	2178444.8803
Tangential Direction:	S 21°27'32.4974" E		
Tangential Length:	5.1248		

Element: Circular			
PC ()	286+21.1863	1475619.1440	2178444.8803
PI ()	289+84.1910	1475281.3030	2178577.6804
CC ()		1474887.4724	2176583.5214
PT ()	293+39.3773	1474918.3415	2178583.2832
Radius:	2000.0000		
Delta:	20°34'28.7635" Right		

Tangent Grade: -2.57%
Tangent Length: 50.0000

Element: Linear

PVI	203+00.0000	961.4398
POE	203+20.6096	960.9102
Tangent Grade:	-2.57%	
Tangent Length:	20.6096	

Horizontal Alignment: XR 1141+00 Big Shanty
Horizontal Description: I-575 Big Shanty
Horizontal Style: MAIN_P_SIDECL

Station	Elevation
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Vertical Alignment: Point Profile

Vertical Description: Big Shanty Point Profile

Vertical Style: Default

Element: Linear

POB	247+49.6578	943.7157
PVI	247+50.0000	943.7180
Tangent Grade:	0.68%	
Tangent Length:	0.3422	

Element: Linear

PVI	247+50.0000	943.7180
PVI	248+00.0000	944.0576
Tangent Grade:	0.68%	
Tangent Length:	50.0000	

Element: Linear

PVI	248+00.0000	944.0576
PVI	248+50.0000	944.2345
Tangent Grade:	0.35%	
Tangent Length:	50.0000	

Element: Linear

PVI	248+50.0000	944.2345
PVI	249+00.0000	944.3917
Tangent Grade:	0.31%	
Tangent Length:	50.0000	

Element: Linear

PVI	249+00.0000	944.3917
PVI	249+50.0000	944.5492
Tangent Grade:	0.32%	
Tangent Length:	50.0000	

Element: Linear

PVI	249+50.0000	944.5492
PVI	250+00.0000	944.6963
Tangent Grade:	0.29%	

	Tangent Length:	50.0000	
Element: Linear			
	PVI	250+00.0000	944.6963
	PVI	250+50.0000	944.8132
	Tangent Grade:	0.23%	
	Tangent Length:	50.0000	
Element: Linear			
	PVI	250+50.0000	944.8132
	PVI	251+00.0000	944.8383
	Tangent Grade:	0.05%	
	Tangent Length:	50.0000	
Element: Linear			
	PVI	251+00.0000	944.8383
	PVI	251+50.0000	944.9736
	Tangent Grade:	0.27%	
	Tangent Length:	50.0000	
Element: Linear			
	PVI	251+50.0000	944.9736
	PVI	252+00.0000	945.1654
	Tangent Grade:	0.38%	
	Tangent Length:	50.0000	
Element: Linear			
	PVI	252+00.0000	945.1654
	PVI	252+50.0000	945.2926
	Tangent Grade:	0.25%	
	Tangent Length:	50.0000	
Element: Linear			
	PVI	252+50.0000	945.2926
	PVI	253+00.0000	945.4268
	Tangent Grade:	0.27%	
	Tangent Length:	50.0000	
Element: Linear			
	PVI	253+00.0000	945.4268
	PVI	253+50.0000	945.5299
	Tangent Grade:	0.21%	
	Tangent Length:	50.0000	
Element: Linear			
	PVI	253+50.0000	945.5299
	PVI	254+00.0000	945.6340
	Tangent Grade:	0.21%	
	Tangent Length:	50.0000	
Element: Linear			
	PVI	254+00.0000	945.6340

CALCULATION SHEET

PROJECT: I-75 / I-575 NORTHWEST CORRIDOR

JOB NUMBER NH000-0575-01(028)

CALC NO. BR#37

SUBJECT: Bridge Survey Shots

BY: JCR

DATE: 11/30/2009

SHEET NO.

SHEET REV.

CALCULATION SHEET

PROJECT: I-75 / I-575 NORTHWEST CORRIDOR

JOB NUMBER NH000-0575-01(028)

CALC NO. BR#37

SUBJECT: Existing Bridge Plans

BY: JCR

DATE: 11/30/2009

SHEET NO.

SHEET REV.

NO.	DATE	BY	CHKD.	APP'D.	TITLE
3	GA	10/10/00	10/10/00	10/10/00	437

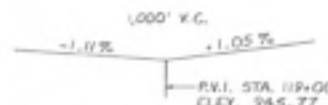
PI. STA. 22+21.79
 $\Delta = 3^\circ 15' 54''$ RT.
 $D = 6^\circ 00'$
 $T = 247.21$
 $L = 521.08$
 $S.C. = 0.087/FT.$
 $E = 195$

HORIZONTAL CURVE DATA ON BIG SHANTY ROAD

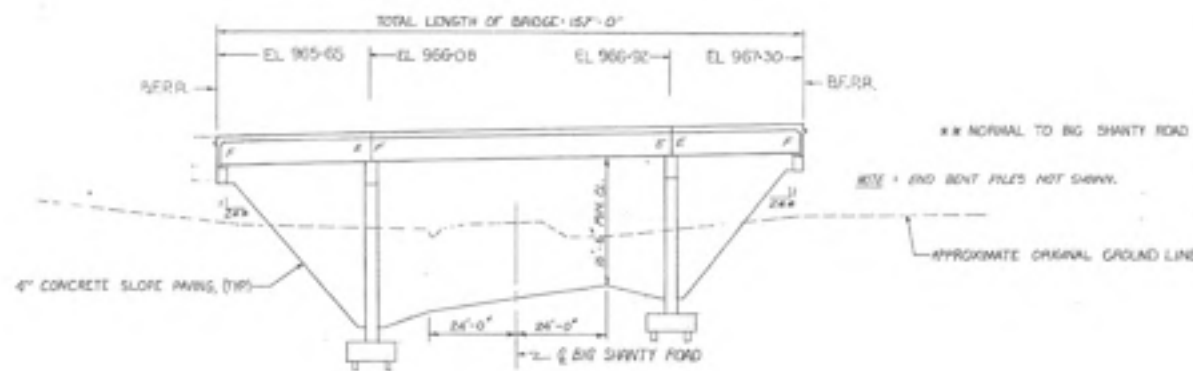


VERTICAL CURVE DATA ON BIG SHANTY ROAD

PLAN SECTION A-A



VERTICAL CURVE DATA ON M.L. 1-575



ELEVATION

LONGITUDINAL SECTION TAKEN ALONG
PROFILE GRADE LINE OF RIGHT BRIDGE.

UTILITIES

NONE

EACH BRIDGE CONSISTS OF:

- 1 - 41'-0" NON-COMPOSITE W BEAM SPAN SPECIAL DESIGN
- 1 - 36'-0" NON-COMPOSITE W BEAM SPAN SPECIAL DESIGN
- 1 - 80'-0" COMPOSITE W BEAM SPAN SPECIAL DESIGN
- 2 - STEEL H PILE END BENTS SPECIAL DESIGN
- 2 - CONCRETE INTERMEDIATE BENTS WITH PILE FOOTINGS SPECIAL DESIGN
- CONCRETE BARRIER SPECIAL DESIGN
- BAR BENDING DETAILS GA. STD. NO. 5901
- END POST AND END POST GUARDRAIL ATTACHMENT DETAIL GA. STD. NO. 3053(2-1-75)
- TYPICAL FILL DETAIL AT END OF BRIDGE GA. STD. NO. 4037(1-1-70)

GENERAL NOTES

SPECIFICATIONS - GEORGIA STANDARD BIDDING 1972.
BIDDING PERIOD - NO WORK SHALL BE STARTED ON BENTS 1 AND 4 UNTIL THE COMPLETED END PILLS HAVE BEEN IN PLACE FOR AN ESTIMATED PERIOD OF 120 DAYS.
OWNER - ALL EXPOSED EDGES SHALL BE CHAMFERED 3/4" UNLESS OTHERWISE NOTED.
PROTECTIVE SURFACE TREATMENT - PER SECTION 504.13C WILL BE REQUIRED AT THIS SITE.
REINFORCEMENT - ALL REINFORCEMENT SHALL BE PLACED AND TIED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. WELDING OF REINFORCEMENT WILL NOT BE PERMITTED, EXCEPT AS SHOWN ON THE PLANS.
DRIVING DATA PILES - ONE REQUIRED AT EACH BENT.
PILING DRIVING OBJECTIVE - SEE SUBSTRUCTURE DETAILS.
PILING - SYSTEM NO. 11 SHALL BE USED ON SUPERSTRUCTURE DETAILS.
PROTECTIVE PLANT - GRASS AND 1" 2" 2" SPECIAL PROTECTION.

SUMMARY

ITEM	QUANTITY	UNIT	PRICE	TOTAL
115	115	CU YD	1.00	115.00
555	555	CU YD	1.00	555.00
LUMP				
126	126	CU YD	1.00	126.00
LUMP				
21591	21591	CU YD	1.00	21591.00
LUMP				
1,444	1,444	CU YD	1.00	1,444.00
LUMP				

DESIGN DATA

SPECIFICATIONS - A.A.S.H.T.O., 1977; INT. 1001, INT. 1015, INT. 1016, INT. 1017, 1018
TYPICAL HS20-44 ANALOG MILITARY LOADINGS - IMPACT ALLOWED
FUTURE PAVING ALLOWANCE = 15 LBS. PER SQ. FT.
 $f_c = 1,000$ PSI FOR ALL CONCRETE
REINFORCEMENT - GRADE 40



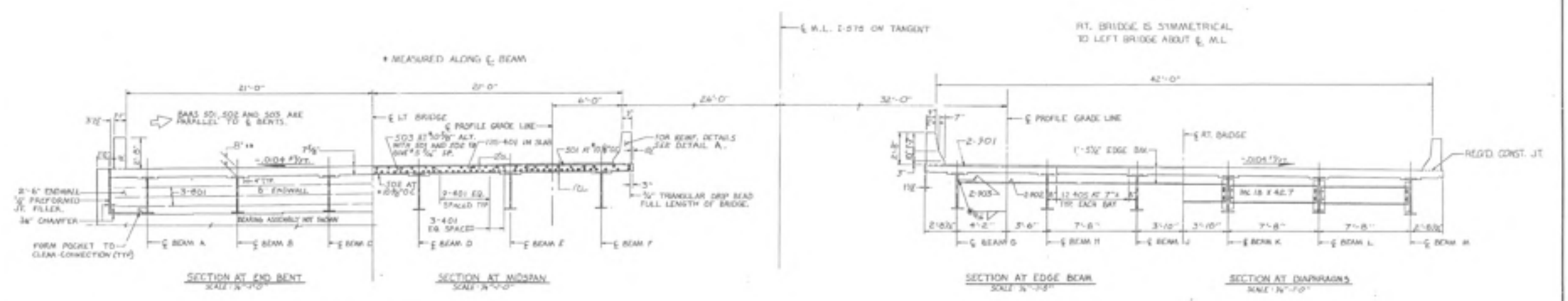
SLOPE PAVING DETAIL (NO SCALE)

BRIDGE NO. 4 LEFT AND 4 RIGHT

GEORGIA DEPARTMENT OF TRANSPORTATION HIGHWAY DIVISION - BRIDGE DESIGN	
PLAN AND ELEVATION M.L. 1-575 OVER BIG SHANTY ROAD COROS - CHEROKEE CO. 3 E 575 - 11/12/00 LT 1 SCALE: 1" = 10'-0" VERTICAL 1" = 20'-0" HORIZONTAL MAR, 1976	
DESIGNED BY CHECKED BY BRIDGE NO.	REVIEWED BY APPROVED BY

DATE RECEIVED 12/10/01

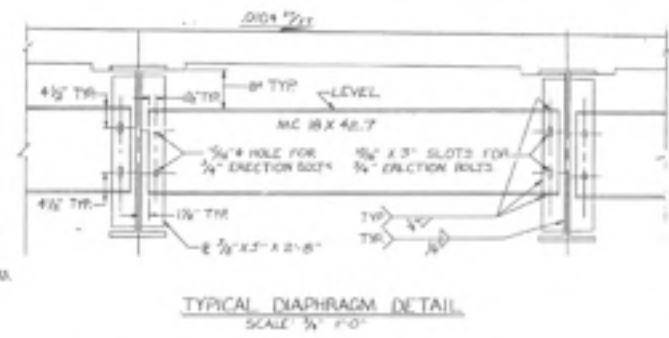
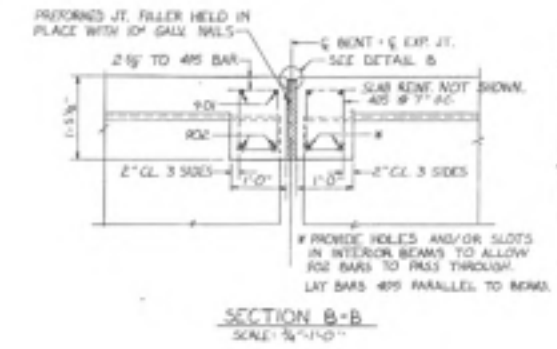
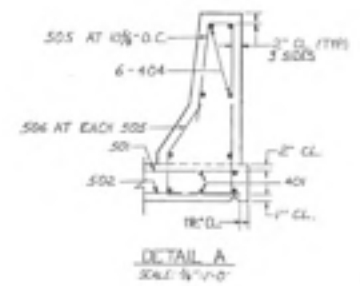
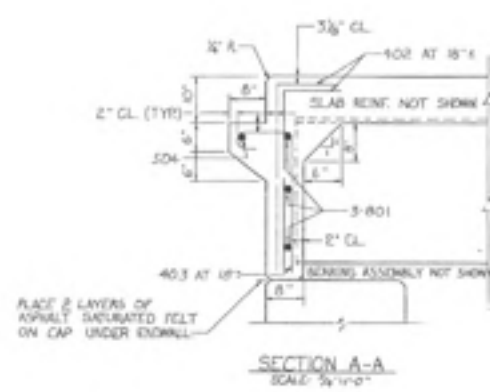
DES. SHEET NO.	DATE	DES. BY	CHECKED BY	APPROVED BY	TOTAL SHEETS
3	CA	1-17-77	10/80	197	437



AT C BEAM ONLY. VARY ELSEWHERE TO COMPENSATE FOR DL DEFLECTION & VERTICAL CURVE.

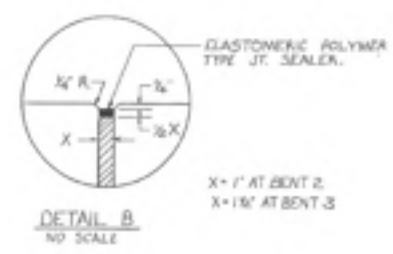
NOTE: 40# S2S BARS MUST BE BENT AT 5 TO CONFORM TO THE SHAPE OF THE BARRIER IN THE 12' LENGTH OF TRANSITION.

NOTE: S01, S03, AND TYP 40# TO BE EPDM COATED



NOTE: DIAPHRAGMS AND CONNECTION PLATES SHALL BE ASTM A-36 STEEL.
DIAPHRAGMS SHALL BE LEVELED AND WELDED AFTER CONCRETE SLAB HAS BEEN POURED.

QUANTITIES									
BRIDGE									
ITEM	SPAN 1	SPAN 2	SPAN 3	TOTAL	SPAN 1	SPAN 2	SPAN 3	TOTAL	
CL. YRD. CLASS. BA. CONC.	59,800	20,000	20,000	99,800	59,800	20,000	20,000	99,800	
CL. YRD. REIN. STEEL	15,000	15,000	15,000	45,000	15,000	15,000	15,000	45,000	
CL. YRD. STRUCTURAL STEEL	10,000	10,000	10,000	30,000	10,000	10,000	10,000	30,000	
CL. YRD. REIN. STEEL EPOXY COAT.	5,445	10,657	47,337	63,439	5,445	10,657	47,337	63,439	



BRIDGE NO 4LT AND 4RT.

GEORGIA
DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION-BRIDGE DESIGN

SUPERSTRUCTURE DETAILS- SHEET 2
ML, I-575 OVER
BIG SHANTY ROAD
COBB-CHESTER CO'S I-575-11/200 CT. 1
SCALE AS SHOWN APRIL, 1976

DESIGNED: FIC
CHECKED: FIC
APPROVED: LAF

BRIDGE SHEET
3 OF 7

BRIDGE NO.	STATE	DESIGN NO.	DATE	BY	CHKD.
3	CA	1-575-0200	1981	437	

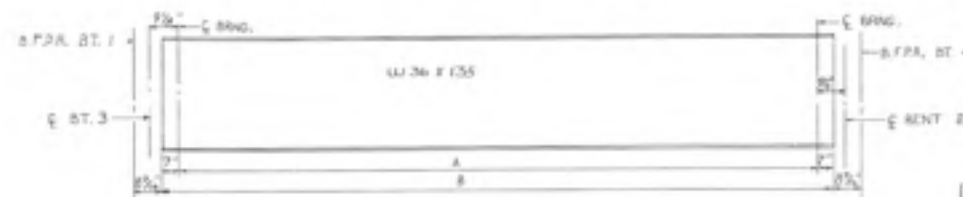
DEAD LOAD DEFLECTIONS					
	SPAN 1		SPAN 2		
	INT. BMS	EXT. BMS	INT. BMS	EXT. BMS	
DEFLECTION DUE TO WEIGHT OF BEAM	1/16"	1/16"	1/16"	1/16"	
DEFLECTION DUE TO WEIGHT OF SLAB, COPING AND BARRIER	1/16"	1/16"	1/16"	1/16"	
TOTAL *	1/8"	1/8"	1/8"	1/8"	

NO CAMBER REQUIRED ON SPANS 1 AND 3.

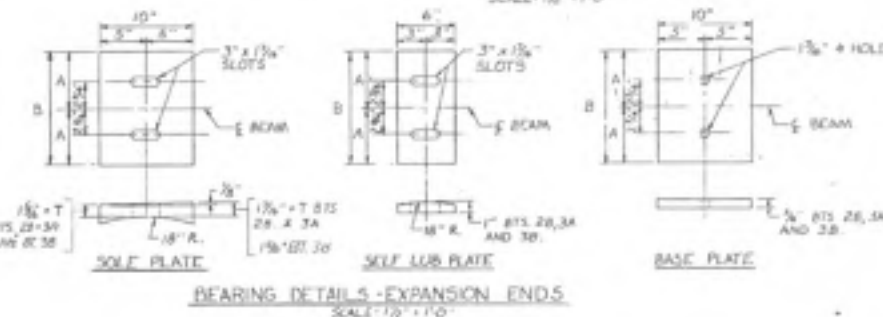
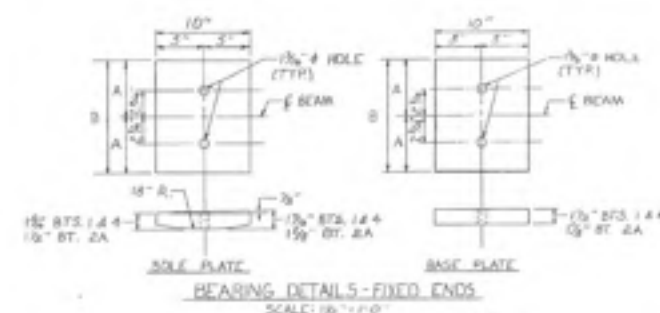
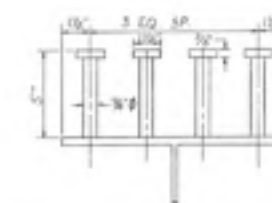
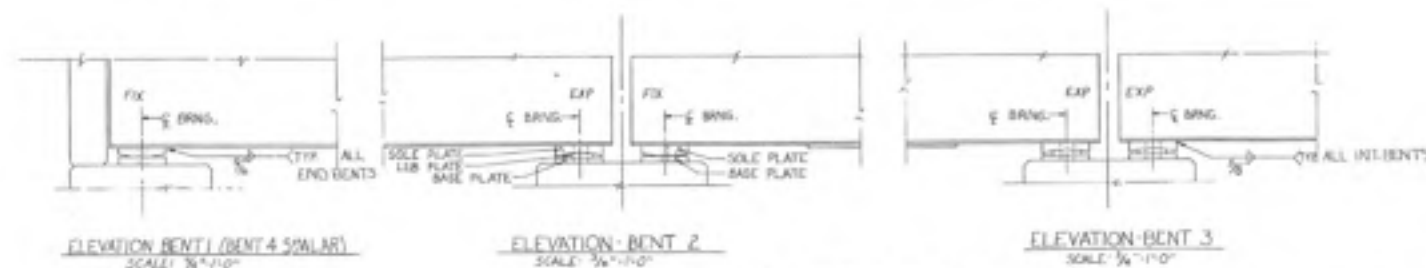
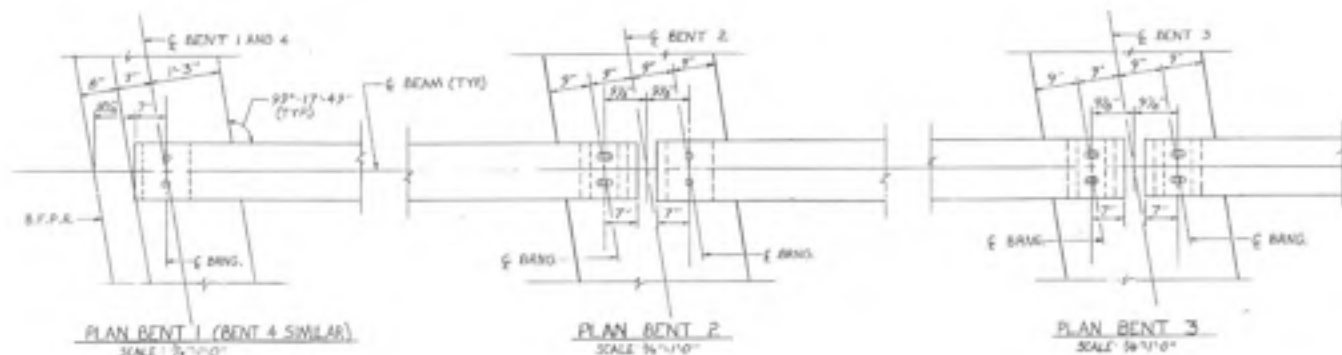
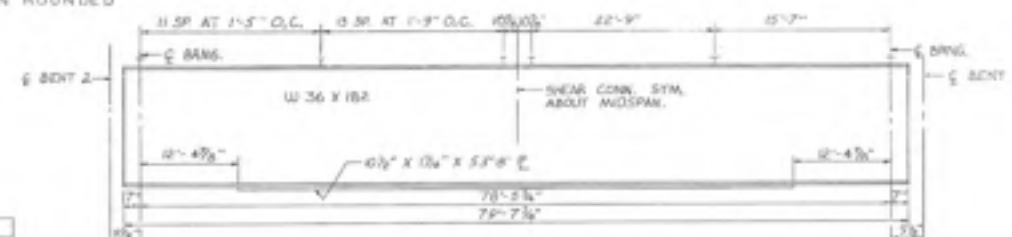
NOTE: W BEAM SECTIONS AND CONCRETE PLATES ARE MAIN LOAD CARRYING MEMBER COMPONENTS SUBJECT TO TENSILE STRESS AND SHALL MEET THE CHART V-NOTCH TEST REQUIREMENTS AS SPECIFIED BY SPECIAL PROVISION MODIFYING SECTION 801 OF THE STANDARD SPECIFICATIONS.

* TOTALS DO NOT NECESSARILY EQUAL THE SUM OF THE PARTS BECAUSE ALL VALUES HAVE BEEN ROUNDED TO THE NEAREST 1/16".

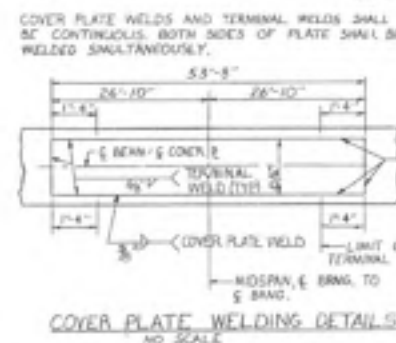
DEAD LOAD DEFLECTIONS		
SPAN 2		
	INT. BMS	EXT. BMS
DEFLECTION DUE TO WEIGHT OF BEAM	1/16"	1/16"
DEFLECTION DUE TO WEIGHT OF SLAB AND COPING	1/16"	1/16"
DEFLECTION DUE TO WEIGHT OF BARRIER	1/16"	1/16"
TOTAL *	1/8"	1/8"
CAMBER	2 1/2"	2 1/2"



SPAN	A	B
1	30'-0 3/4"	40'-1 3/4"
3	19'-0 3/4"	35'-1 3/4"



NOTES: STRUCTURAL STEEL SHIPES SHALL BE A.S.T.M. A-36 UNLESS OTHERWISE NOTED.
SELF-LUBRICATING PLATES SHALL BE CAST IRON.
USE 2-1" x 4" SAE 3090 BOLTS WITH 3" x 3" x 1/4" CUT WIDERS AND A.S.T.M. HEX NUTS AT FIXED ENDS.
USE 2-1" x 4" SAE 3090 BOLTS WITH 3" x 3" x 1/4" CUT WIDERS AND A.S.T.M. HEX NUTS AT EXPANSION ENDS.
CUT SLOTS AND HOLES FOR EDGE BEAM BARS IN INTERIOR BEAMS ONLY.
ANCHOR BOLTS SHALL BE SET 12" INTO CONCRETE.



"T" DIMENSIONS (INCHES)			
BRIDGE	4 LEFT	4 RIGHT	
BEAM	2 BK	3 AH	2 BK
A	1"	1 1/2"	1"
B	1"	1 1/2"	1"
C	1 1/2"	1 1/2"	1 1/2"
D	1"	1 1/2"	1"
E	1"	1 1/2"	1"
F	1 1/2"	1 1/2"	1 1/2"
G	1"	1"	1"
H	1"	1"	1"
J	1"	1"	1"
K	1"	1"	1"
L	1"	1"	1"
M	1"	1"	1"

BENT	A	B
1	40"	12"
2	40"	12"
3	40"	12"
4	40"	12"

BRIDGE NO 4LT AND 4RT.

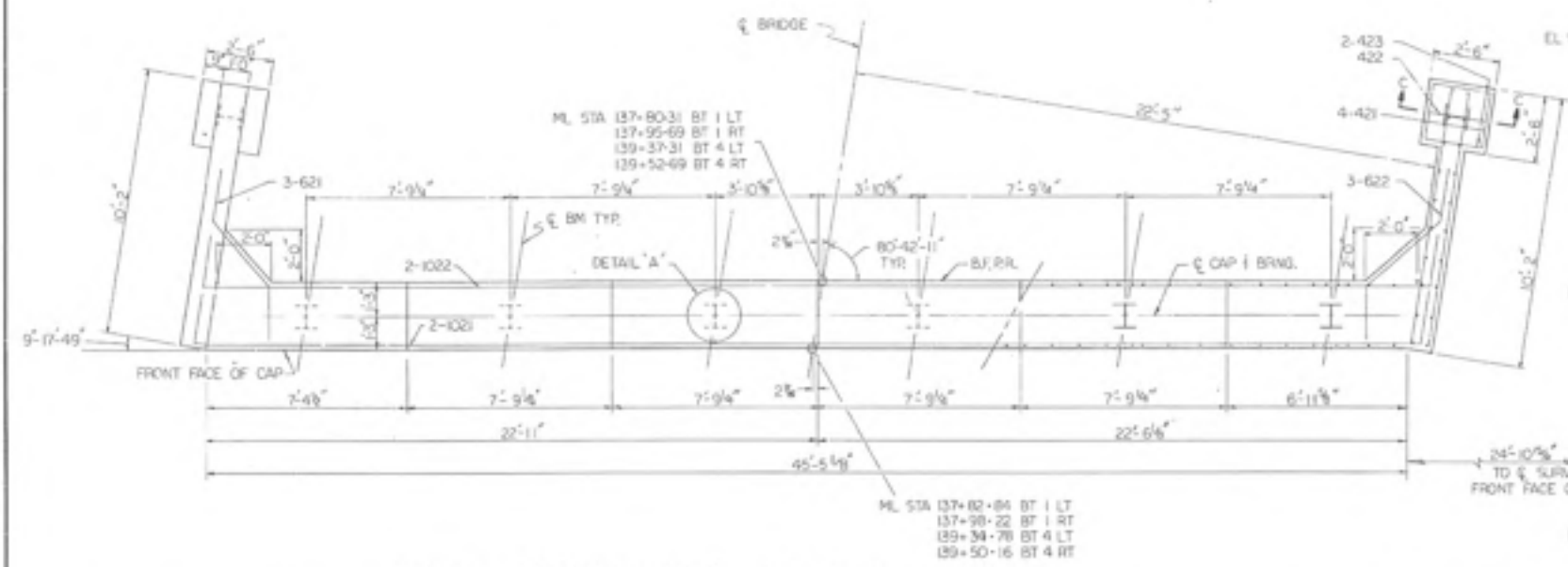
GEORGIA
DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION - BRIDGE DESIGN

SUPERSTRUCTURE DETAILS-SHEET 3
ML 1-575 OVER
BIG SHANTY ROAD
COBB-CHEROKEE CO'S. I-575-0200 C.T. 1
SCALE AS SHOWN MAY, 1976

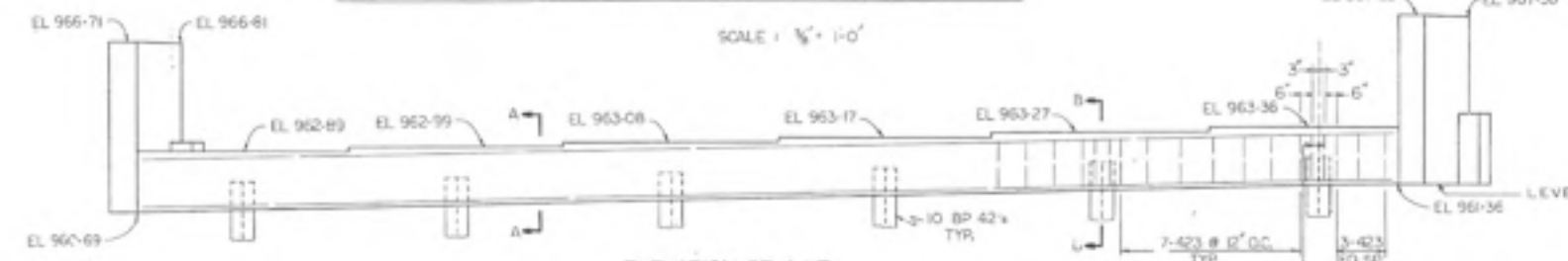
BRIDGE SHEET
4 OF 7

DESIGNED: F.E.C. CHECKED: F.E.C. REVIEWED: L.A.P.
DRAWN: S.W.T. APPROVED:

DES. NO.	PLAN	REV. NO.	REV. DATE	REV. BY	REV. DATE
3	CA	1	1-17-1990	199	437

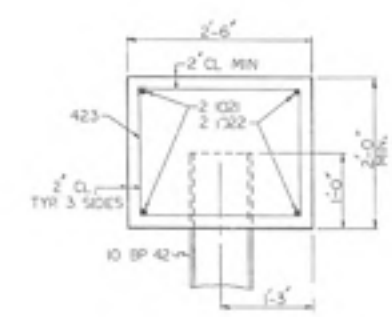


PLAN BT 4 LT. (LOOKING AHEAD) ; BTS 1 LT, 1 RT, 4 RT SIMILAR

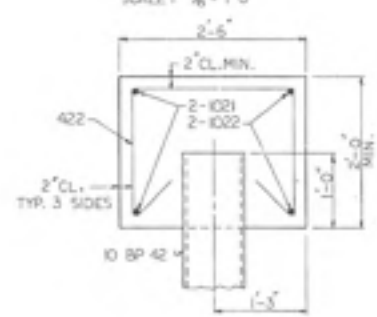


ELEVATION BT 4 LT

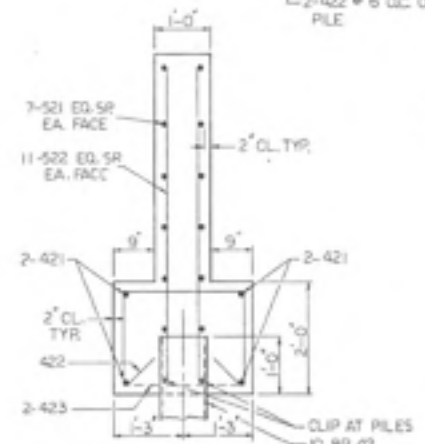
LOOKING AND SCALE: 1/4" = 1'-0"



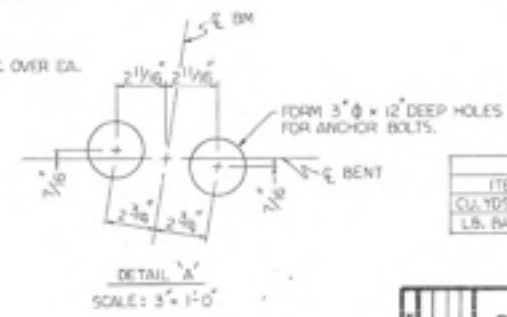
SECTION A-A
SCALE: 1" = 1'-0"



SECTION B-B
SCALE: 1" = 1'-0"



SECTION C-C
SCALE: 3/4" = 1'-0"



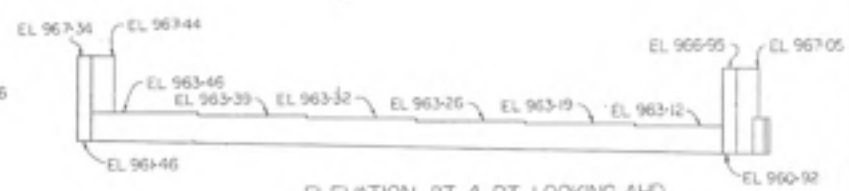
DETAIL 'A'
SCALE: 3/4" = 1'-0"



ELEVATION BT 1 LT. LOOKING BK
SCALE: NONE



ELEVATION BT 1 RT. LOOKING BK
SCALE: NONE



ELEVATION BT 4 RT. LOOKING AHD
SCALE: NONE

PLAN DRIVING OBJECTIVE

DRIVE ALL PILES TO A DRIVING RESISTANCE OF 47 TONS AFTER THE FOLLOWING MIN. TIP ELEVATIONS ARE REACHED:

BR.	BT.	MIN. TIP ELEV.
LT	1	928
LT	4	918
RT	1	925
RT	4	928

QUANTITIES				
ITEM	1 LT	1 RT	4 LT	4 RT
CULYDS. CLASS A CONCRETE	14-13	14-13	14-19	14-18
LB. BAR REINF. STEEL	(80)	(80)	(80)	(80)

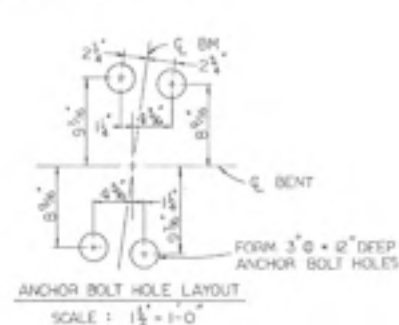
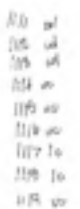
BRIDGE 4LT, 4RT

GEORGIA
DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION-BRIDGE DESIGN

END BENT DETAILS
ML. I-75 OVER BIG SHANTY RD.
COBB-CHEROKEE CO. I-75-112100 C.T. 1
SCALE AS NOTED DEC 1976

BRIDGE SHEET 5 OF 7	DESIGNED: FEG	TRACES: FEG	REVIEWED: LRP
	DRAWN: FEG	CHECKED: FEG	APPROVED:

481	Good
482	ad
485	ad



DRIVE ALL PILES TO A DRIVING RESISTANCE OF 45 TONS AFTER THE FOLLOWING MIN TIP ELEVATIONS ARE REACHED:

NOTE : DO NOT PLACE DOWEL BARS IN CORNERS.

BRIDGE NO. 4 LT. RT

SECTION C-C
SCALE: $\frac{1}{8}'' = 1'-0''$

Reinforcement details shown in the section include:
 - Top reinforcement: 2-9#1, 2-9#2, 2-11#9, 2-11#6
 - Bottom reinforcement: 2-11#7, 2-11#8
 - Dimensions: 3'-0" MIN. (height), 2'-0" CL. MIN. (top width), 2'-0" CL. 5 SIDES (bottom width)

SECTION D-D
SCALE: $\frac{1}{4}" = 1'-0"$

BRIDGE SHEET
6 OF 7

INTERMEDIATE BENTS 2,3
ML 1575 OVER BIG SHANTY ROAD
COBB-CHEROKEE CO's, 1575-1(2)00 CT.1
SCALE AS NOTED DEC 1976

DESIGNED: <i>ABC</i>	TRACED: _____	REVIEWED: <i>LRD</i>
DRAWN: <i>ABC</i>	CHECKED: <i>ABC</i>	APPROVED: _____

[illegible]

44 EPOXY COATING ON BOTTOM OF HULL AND OF THESE SHIPS
 1E, 44 SHIP 1, 28 SHIP 2, 94 SHIP 3

BRIDGE NO 4 LT RT	
STATE HIGHWAY DEPARTMENT OF GEORGIA BRIDGE DIVISION	
BAR REINFORCEMENT DETAILS ML I-575 OVER BIG SHANTY RD. COBB CO. I-575 (R) 00 CT./ NO SCALE FEB 1977	
DESIGNED: <u>FEC</u>	TRACED: _____
DRAWN: <u>DEC</u>	CHECKED: _____
	APPROVED: _____

CALCULATION SHEET

PROJECT: I-75 / I-575 NORTHWEST CORRIDOR

JOB NUMBER NH000-0575-01(028)

CALC NO. BR#37

SUBJECT: Bridge Maintenance Reports

BY: JCR

DATE: 11/30/2009

SHEET NO.

SHEET REV.

BRIDGE INVENTORY DATA LISTING GEOG A DEPARTMENT OF TRANSPORTATION

92.15

SUFF. RATING

Cobb

Structure ID: 067-0115-0

Location & Geography

* Structure I.D.No: 067-0115-0
 * 200 Bridge Information: 06
 * 6A Feature Int: CR 171 BIG SHANTY ROAD
 * 6B Critical Bridge: 0

* 7A Route Number Carried: SR00417
 * 7B Facility Carried: I-575 (NBL)
 * 9 Location: 3 MIE OF KENNESAW
 * 2 DOT District: 7

* 207 Year Photo: 2009
 * 91 Inspection Frequency: 24 Date: 03/11/2009
 * 92A Fract Crit Insp Freq: 00 Date: 02/01/1901
 * 92B Underwater Insp Freq: 00 Date: 02/01/1901
 * 92C Other Spec Insp Freq: 00 Date: 02/01/1901

* 4 Place Code: 00000
 * 5 Inventory Route (OU): 1

* Type: 1
 * Designation: 1
 * Number: 00575
 * Direction: 0
 * 16 Latitude: 34-01.7522 MMS Prefix: SR
 * 17 Longitude: 84-33.637 MMS Suffix: 00 MP: 2.23
 * 98 Border Bridge: 000 %Shared: 00
 * 99 ID Number: 0000000000000000

* 100 STRAFNET: 1
 * 12 Base Highway Network: 1
 * 13A LRS Inventory Route: 671041700
 * 13B Sub Inventory Route: 0
 * 101 Parallel Structure: R
 * 102 Direction of Traffic: 1
 * 264 Road Inventory Mile Post: 019.14
 * 208 Inspection Area: 09 Initials: JMC
 * Engineer's Initial: sgm

* Location I.D. No.: 067-00417D-002.28N

Signs & Attachments

* 104 Highway System: 1
 * 26 Functional Classification: 11
 * 204 Federal Route Type: 1 No.: 00057
 * 105 Federal Lands Highway: 0
 * 110 Truck Route: 1
 * 206 School Bus Route: 0
 * 217 Benchmark Elevation: 00000.00
 * 218 Datum: 0
 * 19 Bypass Length: 01
 * 20 Toll: 3
 * 21 Maintenance: 01
 * 22 Owner: 01
 * 31 Design Load: 6
 * 37 Historical Significance: 5
 * 205 Congressional District: 11
 * 27 Year Constructed: 1980
 * 106 Year Reconstructed: 0000
 * 33 Bridge Median: 1
 * 34 Skew: 20
 * 35 Structure Flared: 0
 * 38 Navigation Control: N
 * 213 Special Steel Design: 0
 * 267 Type of Paint: 5
 * 42 Type of Service on: 1
 * 214 Movable Bridge: 0
 * 203 Type Bridge: Z-O-M-O
 * 259 Pile Encasement: 3
 * 43 Structure Type Main: 3 02
 * 45 No. Spans Main: 003
 * 44 Structure Type Appr: 0 00
 * 46 No. Spans Appr: 0000
 * 226 Bridge Curve Horz: 0 Vert: 0
 * 111 Pier Protection: 0
 * 107 Deck Structure Type: 1
 * 108 Wearing Surface Type: 1 Me 0 F 0

225 Expansion Joint Type: 15
 242 Deck Drains: 0
 243 Parapet Location: 0
 Height: 0.00
 Width: 0.00
 238 Curb: 0.00 0
 239 Handrail: 9 9
 * 240 Median Barrier Rail: 0
 241 Bridge Median Height: 0.00
 Width: 0.00
 * 230 Guardrail Loc Dir Rear: 6
 Fwd: 0
 Oppo Dir Rear: 0
 Fwd: 0
 244 Approach Slab: 3
 224 Retaining Wall: 0
 233 Posted Speed Limit: 65
 236 Warning Sign: 0
 234 Delineator: 1
 235 Hazard Boards: 0
 237 Utilities Gas: 00
 W 00
 Ele 00
 Telephone: 00
 Sa 00
 247 Lighting Street: 0
 Navigation: 0
 Aerial: 0
 * 248 County Continuity No.: 01

BRIDGE INVENTORY DATA LISTING GEOP A DEPARTMENT OF TRANSPORTATION

Structure ID: 067-01115-0

Cobb

SUFF. RATING

92.15

Programming Data

201 Project No.: 1-575-1 (2) 00 CT.1
 202 Plans Available: 4
 249 Prop. Proj. No.: 000000000000000000
 250 Approval Status: 0000
 251 P.I. No.: 00000000
 252 Contract Date: 02/01/1901
 260 Seismic No.: 00000
 75 Type Work: 00 0
 94 Bridge Imp. Cost: \$ 0
 95 Roadway Imp. Cost: \$ 0
 96 Total Imp Cost: \$ 0
 76 Imp. Length: 000000
 97 Imp. Year: 0000
 114 Future ADT: 117060 Year: 2027

Measurements

* 29 ADT: 078040 Year: 2007
 109 % Trucks: 0
 * 28 Lanes On: 02 Under: 02
 210 No. Tracks On: 00 Under: 00
 * 48 Max. Span Length: 0080
 * 49 Structure Length: 157
 51 Br. Rwdy. Width: 40.50
 52 Deck Width: 43.70
 * 47 Tot. Horz. Cl: 40.50
 50 Curb/Sdewlk Width: 0.00/0.00
 32 Approach Rdwy Width: 038
 * 229 Shoulder Width:

Rear Lt: 4.00 Type: 2 Rt: 10.00
 Fwd Lt: 4.00 Type: 2 Rt: 10.00

Pavement Width:

Rear: 24.00 Type: 2
 Fwd: 24.00 Type: 2

Intersection Rear: 0 Fwd: 0

36 Safety Features Br. Rail: 1

Transition:

App. G. Rail: 1

App. Rail End: 1

53 Minimum Cl Over: 99 ' 99 "

Under: H 16 ' 11 "

* 228 Min. Vertical Cl 99 ' 99 "

Act. Odsm Dir: 99 ' 99 "

Oppo. Dir: 99 ' 99 "

Posted Odsm Dir: 00 ' 00 "

Oppo. Dir: 00 ' 00 "

55 Lateral Underl. Rt: H 12.00

56 Lateral Underl. Lt: 0.00

* 10 Max Min Vert Cl: 99 ' 99 " Dir: 0

39 Nav Vert Cl: 000 Horz: 0000

116 Nav Vert Cl Closed: 000

245 Deck Thickness Main: 7.60

Deck Thick Approach: 0.00

246 Overlay Thickness: 0.00

212 Year Last Painted: Sup: 1998 Sub: 0000

* Location I.D. No.: 067-00417D-002.28N

253 Notification Date: 02/01/1901

253 Fed Notify Date: 02/01/1901

0

Hydraulic Data

215 Waterway Data
 Highway Elev.: 0000.0 Year: 1900

Avg. Streambed Elev.: 0000.0 Freq.: 00

Drainage Area: 00000

Area Of Opening: 000000

113 Scour Critical: N

216 Water Depth: 00.0 Br. Height: 00.0

222 Slope Protection: 4

221 Spur Dikes Rear: 0 Fwd: 0

219 Fender System: 0

220 Dolphin: 0

223 Culvert Cover: 000

Type: 0

No. Barrels: 0

Width: 0.00 Height: 0.00

Length: 0 Apron: 0

* 265 U/W Insp. Area: 0 Diver: ZZZ

* Location I.D. No.: 067-00417D-002.28N

253 Notification Date: 02/01/1901

253 Fed Notify Date: 02/01/1901

0

Ratings

65 Inventory Rating Method: 1
 63 Inventory Rating Method: 1
 66 Inventory Type: 2 Rating: 45
 64 Operating Type: 2 Rating: 76
 231 Calculated Loads

H-Modified: 21 0

HS-Modified: 30 0

Type 3: 33 0

Type 3s2: 40 0

Timber: 37 0

Piggyback: 40 0

261 H Inventory Rating: 33

262 H Operating Rating: 55

67 Structural Evaluation: 7

58 Deck Condition: 7

59 Superstructure Condition: 8

* 227 Collision Damage: 0

60A Substructure Condition: 7

60B Scour Condition: N

60C Underwater Condition: N

71 Waterway Adequacy: N

61 Channel Protection Cond: N

68 Deck Geometry: 7

69 UnderClr. Horz/Vert: 7

72 Appr. Alignment: 8

62 Culvert: N

Posting Data

70 Bridge Posting Required: 5

41 Struct Open, Posted, Cl: A

* 103 Temporary Structure: 0

232 Posted Loads H-Modified: 00

HS-Modified: 00

Type 3: 00

Type 3s2: 00

Timber: 00

Piggyback: 00

253 Notification Date: 02/01/1901

253 Fed Notify Date: 02/01/1901

0

GEORGIA DEPARTMENT OF TRANSPORTATION

Bridge Inspection Report

District: 7	Inspection Date: 3/11/2009	Inspection Area: 09
Bridge Inspector: Jerry Cooper	Over: CR 171 BIG SHANTY ROAD	Bridge Status: 06
Location ID: 067-00417D-002.28N	County: Cobb	
Structure ID: 067-0115-0	Road Name: I-575 (NBL)	
EVALUATION & DEFICIENCIES		

SubStructure:

Year Painted: 0000

Concrete caps at both abutments.
 Minor cracks in both abutment caps.
 Bents 2, and 3 have a concrete caps and 3 concrete columns.
 Bent #2 = H-42 Calculated 2004 by Central Office (Load Factor)

SuperStructure:

Year Painted: 1998

3 span steel beam (6 beams per span) .
 Span #1 = H-33 Calculated 2004 by Central Office (Load Factor).

Deck:

7 5/8" concrete slab.
 Very minor cracking noted in the deck surface.
 Deck: H-32 Calculated 2004 by Central Office (Load Factor).

General:

Built in 1980 project # I-575-1 (2) 00 et.1
 Calculations for this structure were determined by the Central Office. - February, 2004.
 Metal S.I.P. deck forms.
 Square end cover plates - welded
 Hand tools and ladder used.

Condition Rating

Temp Shored: No

Component	Material	Rating	Truck Type	Gross/H-Mod	HSMod	Tand	3-S-2	Log	Piggy
Substructure	Concrete	7	Calculated Posting	21	30	33	40	37	40
Superstructure	Steel	8	Posting Required	No	No	No	No	No	No
Deck	Concrete	7	Existing Posting	00	00	00	00	00	00

Not a School Bus Route.

Structure Does Not Require Posting

GEORGIA DEPARTMENT OF TRANSPORTATION

Deficiency Report

District: 7

Inspection Date: 3/11/2009

Inspection Area: 09

Bridge Inspector: Jerry Cooper

Over: CR 171 BIG SHANTY ROAD

Location ID: 067-00417D-002.28N

County: Cobb

Structure ID: 067-0115-0

Asst. District Engineer: Shun Pringle

EVALUATION & DEFICIENCIES

I-575 (NBL) Over CR 171 BIG SHANTY ROAD-----3 MI E OF KENNESAW

Item	Units	Work	P	Date Reported	Location	Date Completed	Complete
800	LIN. FT.	162	B	5/23/2001		12/14/2001	205.00
845	HOURS	20	B	3/9/2005		8/17/2005	161.00

Comments:

BRIDGE INVENTORY DATA LISTING GEOG A DEPARTMENT OF TRANSPORTATION

Structure ID: 067-0115-0 Cobbl Suff. Rating 92.15

Location & Geography

* Structure I.D. No: 067-0115-0
 * 6A Feature Int: SR 417 NBL (I-575)
 * 6B Critical Bridge: 0
 * 7A Route Number Carried: CR00171
 * 7B Facility Carried: BIG SHANTY ROAD
 * 9 Location: 3 MI E OF KENNESAW
 * 91 Inspection Frequency: 00 Date: 02/01/1901
 * 4 Place Code: 00000
 * 5 Inventory Route (O/U): 2
 * Type: 4
 * Designation: 1
 * Number: 00171
 * Direction: 0
 * 16 Latitude: 34-01.7522 HMMS Prefix:
 * 17 Longitude: 84-33.637 HMMS Suffix:
 * 100 STRAHNET: 0 MP:
 * 12 Base Highway Network:
 * 13A LRS Inventory Route: 1
 * 13B Sub Inventory Route: 672017100
 * 101 Parallel Structure: 0
 * 102 Direction of Traffic: R
 * 104 Highway System: 2
 * 26 Functional Classification: 0
 * 204 Federal Route Type: 19 No.:
 * 105 Federal Lands Highway: 0
 * 110 Truck Route: 0
 * 19 Bypass Length: 01
 * 20 Toll: 3
 * 21 Maintenance: 01
 * 22 Owner: 01
 * 27 Year Constructed: 1980
 * 42 Type of Service on: 1 Under: 1
 * 43 Structure Type Main: 3 02
 * 208 Inspection Area: 09 Initials: JMC
 * Location I.D. No.: 067-00171X-000.62W
 * XReference I.D. No 067-00417D-002.28N

Ratings

* 227 Collision Damage: 0

Posting Data

* 103 Temporary Structure: 0
 * 248 County Continuity No.: 01

Measurements

* 29 ADT: 001710 Year: 1998
 * 28 Lanes On: 02 Under: 02
 * 48 Max. Span Length: 0080 157
 * 49 Structure Length: 58.00
 * 47 Tot. Horiz. Cl:
 * 229 Shoulder Width:
 Rear Lt: 12.00 Type: 8 Rt: 12.00
 Fwd Lt: 12.00 Type: 1 Rt: 12.00
 Pavement Width:
 Rear: 24.00 Type: 2
 Fwd: 24.00 Type: 2
 Intersection Rear: 0 Fwd: 0

Hydraulic Data

* 228 Min. Vertical Cl
 Act. Odm Dir: 16 ' 11 "
 Oppo. Dir: 99 ' 99 "
 Posted Odm. Dir: 00 ' 00 "
 Oppo. Dir: 00 ' 00 "
 * 10 Max Min Vert Cl: 17 ' 08 " Dir: 3
 * 265 U/W Insp. Are 0 Diver: ZZZ

SubStructure Data

Bent#	Type	Foundation	Col	#Cols	Piling	#Piles	Sway	CAP	Remarks
1	A			0		0		C	Only cap exposed
2	B		C	3		0		C	
3	B		C	3		0		C	
4	A			0		0		C	Only cap exposed

SuperStructure Data

Span#	Beam Type	Spacing	Length	#Beams	Remarks
1	Steel Beams	7.70	41.00	6	W36 X 135
2	Steel Beams	7.70	80.00	6	W36 X 182
3	Steel Beams	7.70	36.00	6	W36 X 135

Bearing Data

Span#	Rear Type Bearing	FWD Type Bearing	Remarks
1	02 - Fixed Plate	01 - Sliding Plate	
2	02 - Fixed Plate	01 - Sliding Plate	
3	01 - Sliding Plate	02 - Fixed Plate	

BRIDGE INVENTORY DATA LISTING GEOGRAPHY A DEPARTMENT OF TRANSPORTATION

Structure ID: 067-0116-0 Cobb SUFF. RATING 92.15

Location & Geography

* Structure I.D. No:	067-0116-0	* 104 Highway System:	1	Signs & Attachments	
* 200 Bridge Information	06	* 26 Functional Classification:	11	225 Expansion Joint Type:	15
* 6A Feature Int:	CR 171 BIG SHANTY ROAD	* 204 Federal Route Type:	1	242 Deck Drains:	0
* 6B Critical Bridge:	0	* 105 Federal Lands Highway:	0	243 Parapet Location:	0
* 7A Route Number Carried:	SR00417	* 110 Truck Route:	1	Height:	0.00
* 7B Facility Carried:	1-575 (SBL)	* 206 School Bus Route:	0	Width:	0.00
* 9 Location:	3 MI E OF KENNESAW	* 217 Benchmark Elevation:	0000.00	238 Curb:	0.00
* 2 DOT District:	7	* 218 Datum:	0	239 Handrail:	9 9
* 207 Year Photo:	2009	* 19 Bypass Length:	01	* 240 Median Barrier Rail:	0
* 91 Inspection Frequency:	24 Date: 03/11/2009	* 20 Toll:	3	241 Bridge Median Height:	0.00
* 92A Fract Crit Insp Freq:	00 Date: 02/01/1901	* 21 Maintenance:	01	Width:	0.00
* 92B Underwater Insp Freq:	00 Date: 02/01/1901	* 22 Owner:	01	* 230 Guardrail Loc Dir Rear:	6
* 92C Other Spec. Insp Freq:	00 Date: 02/01/1901	* 31 Design Load:	6	Fwd:	6
* 4 Place Code:	00000	* 37 Historical Significance:	5	Oppo Dir Rear:	0
* 5 Inventory Route (O/U):	1	* 205 Congressional District:	11	Fwd:	0
Type:	1	* 27 Year Constructed:	1980	244 Approach Slab:	3
Designation:	1	* 106 Year Reconstructed:	0000	224 Retaining Wall:	0
Number:	00575	* 33 Bridge Median:	1	233 Posted Speed Limit:	65
Direction:	0	* 34 Skew:	20	236 Warning Sign:	0
* 16 Latitude:	34-01.7470	* 35 Structure Flared:	0	234 Delineator:	1
* 17 Longitude:	84-33.6548	* 38 Navigation Control:	N	235 Hazard Boards:	0
* 98 Border Bridge:	000 MMS Prefix: SR	* 213 Special Steel Design:	0	237 Utilities Gas:	00
* 99 ID Number:	0000000000000000	* 267 Type of Paint:	5	W	00
* 100 STRAHNET:	1	* 42 Type of Service on:	1	Ele	00
12 Base Highway Network:	1	* 214 Movable Bridge:	0	Telephone:	00
13A LRS Inventory Route:	671041700	* 203 Type Bridge:	Z-O-M-O	Su	00
13B Sub Inventory Route:	0	* 259 Pile Encasement:	3	247 Lighting Street:	0
* 101 Parallel Structure:	L	* 43 Structure Type Main:	3 02	Navigation:	0
* 102 Direction of Traffic:	1	* 45 No. Spans Main:	003	Aerial:	0
* 264 Road Inventory Mile Post:	019.15	* 44 Structure Type Appr:	0 00	* 248 County Continuity No.:	01
* 208 Inspection Area:	09 Initials: JMC	* 46 No. Spans Appr:	0000		
Engineer's Initial:	sgm	* 226 Bridge Curve Horz:	0 Vert: 0		
* Location I.D. No.:	067-00417D-002.29N	* 111 Pier Protection:	0		
		* 107 Deck Structure Type:	1		
		* 108 Wearing Surface Type:	Mk 0		
			F 0		

BRIDGE INVENTORY DATA LISTING GEOGRAPHIC A DEPARTMENT OF TRANSPORTATION

Structure ID: 067-0116-0

Cobb

SUFF. RATING

92.15

Programming Data

201 Project No.: I-575-1 (2) 00 CT.1
 202 Plans Available: 4
 249 Prop. Proj. No.: 000000000000000000
 250 Approval Status: 0000
 251 P.J. No.: 00000000
 252 Contract Date: 02/01/1901
 260 Seismic No.: 00000
 75 Type Work: 00 0
 94 Bridge Imp. Cost: \$ 0
 95 Roadway Imp. Cost: \$ 0
 96 Total Imp. Cost: \$ 0
 76 Imp. Length: 000000
 97 Imp. Year: 0000
 114 Future ADT: 117060 Year: 2027

Measurements

* 29 ADT: 078040 Year: 2007
 109 % Trucks: 0
 * 28 Lanes On: 02 Under: 02
 210 No. Tracks On: 00 Under: 00
 * 48 Max. Span Length: 0080
 * 49 Structure Length: 157
 51 Br. Rowdy. Width: 40.50
 52 Deck Width: 43.70
 * 47 Tot. Horiz. Cl: 40.50
 50 Curb/Sdewlk Width: 0.00/0.00
 32 Approach Rdwy Width: 038
 * 229 Shoulder Width: 4.00 Type: 2 Rt: 10.00
 Rear Lt: 4.00 Type: 2 Rt: 10.00
 Fwd Lt: 4.00 Type: 2 Rt: 10.00

Pavement Width:

Rear: 24.00 Type: 2
 Fwd: 24.00 Type: 2

Intersection Rear: 0 Fwd: 0

36 Safety Features Br. Rail: 1

Transition: 1

App. G. Rail: 1

App. Rail End: 1

53 Minimum CLOver: 99 ' 99 "

Under: H 17 ' 05 "

* 228 Min. Vertical Cl: 99 ' 99 "

Act. Odm Dir: 99 ' 99 "

Oppo. Dir: 00 ' 00 "

Posted Odm. Dir: 00 ' 00 "

Oppo. Dir: 00 ' 00 "

55 Lateral Undercl. Rt: H 12.00

56 Lateral Undercl. Lt: 0.00

* 10 Max Min Vert Cl: 99 ' 99 " Dir: 0

39 Nav Vert Cl: 000 Horiz: 0000

116 Nav Vert Cl Closed: 000

245 Deck Thickness Main: 7.60

Deck Thick Approach: 0.00

246 Overlay Thickness: 0.00

212 Year Last Painted: Sup: 1998 Sub: 0000

Ratings

65 Inventory Rating Method: 1
 63 Inventory Rating Method: 1
 66 Inventory Type: 2 Rating: 45
 64 Operating Type: 2 Rating: 76
 231 Calculated Loads

H-Modified: 21 0
 HS-Modified: 30 0
 Type 3: 33 0
 Type 3s2: 40 0
 Timber: 37 0
 Piggyback: 40 0

261 H Inventory Rating: 33

262 H Operating Rating: 55

67 Structural Evaluation: 7

58 Deck Condition: 7

59 Superstructure Condition: 8

* 227 Collision Damage: 0

60A Substructure Condition: 7

60B Scour Condition: N

60C Underwater Condition: N

71 Waterway Adequacy: N

61 Channel Protection Cond: N

68 Deck Geometry: 7

69 UnderClr. Horiz/Vert: 7

72 Appr. Alignment: 8

62 Culvert: N

Posting Data

70 Bridge Posting Required: 5
 41 Struct Open, Posted, Cl: A
 * 103 Temporary Structure: 0
 232 Posted Loads H-Modified: 00
 HS-Modified: 00
 Type 3: 00
 Type3s2: 00
 Timber: 00
 Piggyback: 00
 253 Notification Date 02/01/1901
 253 Fed Notify Date: 02/01/1901 0

GEORGIA DEPARTMENT OF TRANSPORTATION

Bridge Inspection Report

District: 7
 Bridge Inspector: Jerry Cooper
 Location ID: 067-00417D-002.29N
 Structure ID: 067-0116-0

Inspection Date: 3/11/2009
 Over: CR 171 BIG SHANTY ROAD
 County: Cobb
 Road Name: I-575 (SBL)

Inspection Area: 09
 Bridge Status: 06

EVALUATION & DEFICIENCIES

SubStructure:

Year Painted: 0000

Concrete caps at both abutments.
 Minor cracking in both abutment caps.
 Bents 2, and 3 have concrete caps and 3 concrete columns.
 Bent #2 = H-42 Calculated 2004 by Central Office (Load Factor)

SuperStructure:

Year Painted: 1998

3 span steel beam - (6 beams per span).
 Span #1 = H-33 Calculated 2004 by Central Office (Load Factor).

Deck:

7 5/8" concrete slab.
 Deck: H-32 Calculated 2004 by Central Office (Load Factor).
 Very minor cracking noted in the deck surface.
 Approach slabs are low at both abutments but have been overlaid.

General:

Built in 1980 project # I-575-1 (2) 00 et.1
 Aetal S.I.P.. deck forms.
 Square end cover plate ends welded.
 Calculations for this structure were determined by the Central Office. - February, 2004.
 Hand tools and ladder used.

Condition Rating

Temp Shored: No

Component	Material	Rating	Truck Type	Gross/H-Mod	HSMod	Tand	3-S-2	Log	Piggy
Substructure	Concrete	7	Calculated Posting	21	30	33	40	37	40
Superstructure	Steel	8	Posting Required	No	No	No	No	No	No
Deck	Concrete	7	Existing Posting	00	00	00	00	00	00

Not a School Bus Route.

Structure Does Not Require Posting

GEORGIA DEPARTMENT OF TRANSPORTATION

Deficiency Report

District: 7 Inspection Date: 3/11/2009 Inspection Area: 09
Bridge Inspector: Jerry Cooper Over: CR 171 BIG SHANTY ROAD
Location ID: 067-00417D-002.29N County: Cobb
Structure ID: 067-0116-0 Asst. District Engineer: Shun Pringle

EVALUATION & DEFICIENCIES

I-575 (SBL) Over CR 171 BIG SHANTY ROAD-----3 MI E OF KENNESAW

Item	Units	Work	P	Date Reported	Location	Date Completed	Complete
800	LIN. FT.	162	B	5/23/2001		12/14/2001	205.00
845	HOURS	20	B	3/9/2005		8/16/2005	160.00

Comments:

BRIDGE INVENTORY DATA LISTING GEOGRAPHIC A DEPARTMENT OF TRANSPORTATION

92.15

SUFF. RATING

Cobb

Structure ID: 067-0116-0

Location & Geography

* Structure I.D. No: 067-0116-0
 * 6A Feature Int: SR 417 SBL (I-575)
 * 6B Critical Bridge: 0
 * 7A Route Number Carried: CR00171
 * 7B Facility Carried: BIG SHANTY ROAD
 * 9 Location: 3 MI E OF KENNESAW
 * 91 Inspection Frequency: 00 Date: 02/01/1901
 * 4 Place Code: 00000
 * 5 Inventory Route (O/U): 2
 * Type: 4
 * Designation: 1
 * Number: 00171
 * Direction: 0
 * 16 Latitude: 34-01.7470 HMMS Prefix:
 * 17 Longitude: 84-33.6548 HMMS Suffix:
 * 100 STRAHNET: 0
 * 12 Base Highway Network:
 * 13A LRS Inventory Route: 1
 * 13B Sub Inventory Route: 672017100
 * 101 Parallel Structure: 0
 * 102 Direction of Traffic: L
 * 104 Highway System: 2
 * 26 Functional Classification: 0
 * 204 Federal Route Type: 19
 * 105 Federal Lands Highway: 0
 * 110 Truck Route: 0
 * 19 Bypass Length: 01
 * 20 Toll: 3
 * 21 Maintenance: 01
 * 22 Owner: 01
 * 27 Year Constructed: 1980
 * 42 Type of Service on: 1 Under: 1
 * 43 Structure Type Main: 3 02
 * 208 Inspection Area: 09 Initials: JMC
 * Location I.D. No.: 067-00171X-000.65W
 * XReference I.D. No 067-00417D-002.29N

Signs & Attachments

* 240 Median Barrier Rail: 0
 * 230 Guardrail Loc Dir Rear: 0
 * Fwd: 0
 * Oppo Dir Rear: 0
 * Fwd: 0

Ratings

* 227 Collision Damage: 0

Measurements

* 29 ADT: 001710 Year: 1998
 * 28 Lanes On: 02 Under: 02
 * 48 Max. Span Length: 0080
 * 49 Structure Length: 157
 * 47 Tot. Horz. Cl: 58.00
 * 229 Shoulder Width:

Rear Lt: 12.00 Type: 8 Rt: 12.00
 Fwd Lt: 12.00 Type: 1 Rt: 12.00

Pavement Width:

Rear: 24.00 Type: 2
 Fwd: 24.00 Type: 2
 Intersection Rear: 0 Fwd: 0

* 228 Min. Vertical Cl

Act. Odm Dir: 17 ' 05 "
 Oppo. Dir: 99 ' 99 "
 Posted Odm. Dir: 00 ' 00 "
 Oppo. Dir: 00 ' 00 "
 * 10 Max Min Vert Cl: 17 ' 11 " Dir: 3

Hydraulic Data

* 265 U/W Insp. Are 0 Driver: ZZZ

GEORGIA DEPARTMENT OF TRANSPORTATION
Bridge Component Report

District: 7
Bridge Inspector: Jerry Cooper
Location ID: 067-00417D-002.29N
Structure ID: 067-0116-0

Inspection Date: 3/11/2009
Over: CR 171 BIG SHANTY ROAD
County: Cobb
Road Name: I-575 (SBL)

Inspection Area: 09

SubStructure Data

Bent#	Type	Foundation	Col	#Cols	Piling	#Piles	Sway	CAP	Remarks
1	A			0		0		C	ONLY CAP EXPOSED
2	B		C	3		0		C	
3	B		C	3		0		C	
4	A			0		0		C	ONLY CAP EXPOSED

SuperStructure Data

Span#	Beam Type	Spacing	Length	#Beams	Remarks
1	Steel Beams	7.70	41.00	6	W36 X 135
2	Steel Beams	7.70	80.00	6	W36 X 182
3	Steel Beams	7.70	36.00	6	W36 X 135

Bearing Data

Span#	Rear Type Bearing	FWD Type Bearing	Remarks
1	02 - Fixed Plate	01 - Sliding Plate	
2	02 - Fixed Plate	01 - Sliding Plate	
3	01 - Sliding Plate	02 - Fixed Plate	

CALCULATION SHEET

PROJECT: I-75 / I-575 NORTHWEST CORRIDOR

JOB NUMBER NH000-0575-01(028)

CALC NO. BR#37

SUBJECT: Bridge Foundation Investigation

BY: JCR

DATE: 11/30/2009

SHEET NO.

SHEET REV.

**BRIDGE AND RETAINING WALL
FOUNDATION INVESTIGATION REPORT
I-575 over SR CR 171 (Big Shanty Road)
Northwest Corridor Project
GDOT Project No. CSNI IS-0008-00(256), PI No. 0008256
Cobb County, Georgia**

WILLMER ENGINEERING INC.
Project No. ATL-171-3099C

Document No.: ATL-171-3099C
Revision: 1
Issue Date: August 22, 2008
Document Status: Issued For Use

Prepared For
GEORGIA TRANSPORTATION PARTNERS
Atlanta, Georgia

Prepared By
WILLMER ENGINEERING INC.
3772 Pleasantdale Road
Suite 165
Atlanta, Georgia 30340-4270

770.939.0089

August 22, 2008

VIA COURIER

Pete M. McMahon, PE
Georgia Transportation Partners
c/o PBS&J, Inc.
5665 New Northside Drive, Suite 400
Atlanta, Georgia 30328

**SUBJECT: Bridge and Retaining Wall Foundation Investigation Report
I-575 over CR 171 (Big Shanty Road)
Northwest Corridor Project
GDOT Project No. CSNHS-0008-00(256), PI No. 0008256
Cobb County, Georgia
Willmer Project No. ATL-171-3099C**

Dear Mr. McMahon:

Willmer Engineering Inc. (Willmer) is pleased to provide this Bridge and Retaining Wall Foundation Investigation (BFI and WFI) report for the proposed widening of I-575 bridge over CR 171 (Big Shanty Road) in Cobb County, Georgia. The BFI and WFI were performed in general accordance with our contract with Georgia Transportation Partners (GTP), dated May 12, 2007. The objective of this investigation was to gather sufficient geotechnical information to support the costing plans to be developed by GTP. Additional borings will be performed in the design/build phase of the project to provide additional information as required. This report was prepared in general accordance with Georgia Department of Transportation (GDOT) guidance documents for bridge and retaining wall foundation investigation. This report was revised to incorporate GTP comments dated December 18, 2007, and GDOT comments dated July 18, 2008.

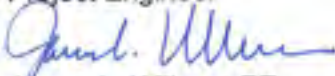
The attached summary presents the site and subsurface conditions along the proposed bridge and retaining wall alignments, and our geotechnical recommendations related to foundation design and construction.

We appreciate the opportunity to be of service to you on this project and look forward to a continuing relationship. Please contact us if you have any questions concerning this report or require further assistance.

Sincerely,

WILLMER ENGINEERING INC.

Murthy S. Kotha
Project Engineer



James L. Willmer, PE
Executive Vice President/Principal Consultant

Sujit K. Bhowmik, PhD, PE
Chief Engineer

MSK/SKB/JLW:ks

\\willmer\Projects\171-GDOT\171-3099 Northwest Corridor Project (Bentley)\Reports\3099 C - Big Shanty Road\21-3099C REVISED BFI - WFI Report - I-575 over CR 171 (Big Shanty Road) 8-22-08.doc

Geotechnical Engineering • Environmental Services and Engineering • Construction Services

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Suite 165
Atlanta, GA 30340-4270

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www.willmerengineering.com

Attachments: Bridge and Retaining Wall Foundation Investigations

Figures

Figure 1	Project Location Map
Figure 2A	Boring Location Plan (Bridge)
Figure 2B	Boring Location Plan (Wall Nos. 2 and 3)
Figure 2C	Boring Location Plan (Wall Nos. 4 and 5)
Figure 3	Generalized Subsurface Profile Section A-A' (Lt. Bridge)
Figure 4	Generalized Subsurface Profile Section B-B' (Lt. Bridge)
Figure 5	Generalized Subsurface Profile Section C-C' (Rt. Bridge)
Figure 6	Generalized Subsurface Profile Section D-D' (Rt. Bridge)
Figure 7	Generalized Subsurface Profile Section E-E' (Wall Nos. 2 & 3)
Figure 8	Generalized Subsurface Profile Section F-F' (Wall Nos. 4 & 5)

Appendix I

Boring Record Legend
Unified Soil Classification System Reference Sheet
Engineering Description of Rock Hardness
Boring Records: BB-1 through BB-4, and W-1 through W-9 (New Borings)
Laboratory Test Results

Appendix II

Boring Records: B-1 through B-12 (Borings from Existing GDOT BFI Report) |

Revision History:

<u>Revision</u>	<u>Issue Date</u>	<u>Document Status</u>
A	December 5, 2007	Issued for Review
0	January 7, 2008	Issued for Use
1	August 22, 2008	Issued for Use

BRIDGE FOUNDATION INVESTIGATION	
Willmer Project Number	ATL-171-3099C
GDOT Project Number	CSNHIS-0008 00(256)
Project P.I. Number	0008256
Location	I-575 Bridge over CR 171 (Big Shanty Road), Cobb County, Georgia (see Figure 1)
GENERAL INFORMATION	
Project Description	<p>The existing I-575 bridges over CR 171 (Big Shanty Road) are planned to be replaced with two new parallel bridges as part of the proposed I-575 widening over Big Shanty Road. The bridges will be single span, 115 foot long reinforced concrete structures. New high occupancy vehicle (HOV) ramps from I-575 down to Big Shanty Road will be constructed between the two bridges.</p> <p>The existing bridges have three spans and are supported on H-pile bents at the end bents and H-pile footings at the intermediate bents. The BFI report for the existing bridges was obtained from GDOT, and it includes twelve borings performed by GDOT in 1976. Subsurface information from those twelve borings was used along with four new borings performed as part of the present study.</p>
Geologic Information	The project alignment is geologically sited within the Piedmont Physiographic Province of Georgia, and is underlain by Metamorphosed Mafic Rock Formations which include amphibolite, mica schist, hornblende gneiss and biotite gneiss.
Subsurface Features	<p>Subsurface information for this project was obtained from four borings (BB-1 through BB-4) performed by Willmer as part of the present study (see Appendix I) and twelve borings (B-1 through B-12) performed by GDOT in 1976 as part of the BFI for the existing bridges (see Appendix II).</p> <p>The subsurface profile is generally comprised of fill and residuum underlain by partially weathered rock and parent bedrock. It should be noted that the available logs for borings B-1 through B-12 do not differentiate between fill and residuum in the soil description. The fill material consists of loose to medium dense silty sand. The residual soils consist of loose to dense silty sand and/or very soft to firm sandy silt.</p> <p>During the present field investigation ground water was encountered at all boring locations between elevations 925 and 935 feet, and during the field investigation by GDOT in 1976, ground water was encountered between elevations 949 and 951 feet.</p>

PWR AND AUGER REFUSAL ELEVATIONS (feet)				
Bridge	Bent No.	Reference Boring No.	Top of PWR	Auger Refusal
Left	1	BB-1	910	908
		B-2	912	*
		B-3	928	913
	2	BB-2	915	914
		B-4	912	905
		B-5	919	*
Right	1	B-6	922	*
		B-8A	920	*
		B-9	919	912
	2	BB-3	918	910
		B-10	908	*
		B-11	907	*
		BB-4	905	904
* Boring was not extended to auger refusal.				

MAXIMUM PILE DESIGN LOADS			
Pile Type	Load Transfer (%)		Design Load
	Friction	End Bearing	
H-Piles	20	80	10 BP 42 = 55 Tons
			12 BP 53 = 70 Tons
			14 BP 73 = 96 Tons
			14 BP 89 = 117 Tons

FOUNDATION RECOMMENDATIONS			
Bridge	Bent No.	Pile Footing (Type)	Pile Bent (Type)
Left	1		H
	2		H
Right	1		H
	2		H

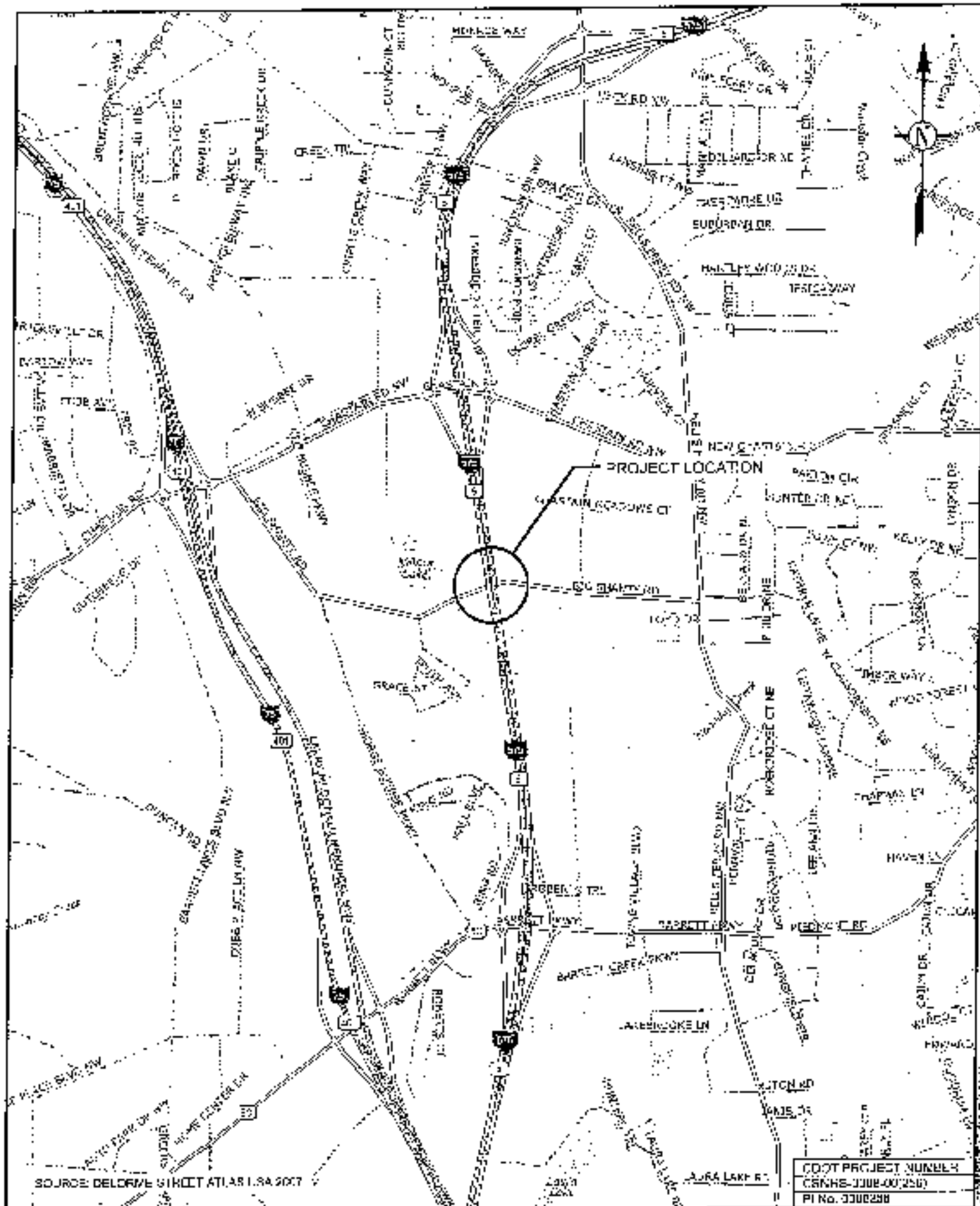
PILE TIP ELEVATIONS (feet)				
Bridge	Bent No.	Reference Boring No.	H-Pile	
			Minimum Tip	Estimated Tip
Left	1 Left	BB-1	915±	910±
	1-Center	B-2	918±	915±
	1-Right	B-3	925±	925±
	2-Left	BB-2	914±	914±
	2-Center	B-4	911±	909±
	2-Right	B-5	915±	909±
Right	1-Left	B-8	925±	918±
	1-Center	B-9	910±	918±
	1-Right	BB-3	915±	915±
	2-Left	B-10	920±	910±
	2-Center	B-11	919±	910±
	2-Right	BB-4	904±	904±
NOTES				
Elevations		All elevations referenced in this report are based on Control Points No. 508 (5/8" rebar, EL. 944.63 feet), No. 252 (60D Traverse, FI 967.18 feet), No. 148 (1/2" rebar, EL. 956.41 feet) and No. 9203 (1/2" rebar, EL. 965.23 feet) established by the surveyors.		
PDO		Driving resistance after Minimum Tip Elevations are achieved.		
Points		Pile points are recommended for piles driven at all bents to insure adequate penetration into dense/very dense soils and PMR. The use of points should be at the direction of the project Geotechnical Engineer.		
Down-drag Protection		To avoid inducing down-drag loads onto the piles from potential settlement of the loose to very loose silty sand and soft to very soft sandy silt layers during construction of the MSE wall, we recommend that the piles at both bents be protected from down drag by using jackets or other approved measures.		
Waiting Period		None required (see MSF wall recommendations)		
Special Problems		None.		
As-built Information		As-built information should be forwarded to the Geotechnical Engineering Bureau upon completion of the foundation system.		

RETAINING WALL INVESTIGATION	
Location and Description	<p>Four retaining walls are proposed for the bridge abutments and new HOV ramps from I-575 down to CR 171 (Big Shanty Road). Wall Nos. 2 and 3 extend from Station 130+00 along the two sides of the proposed HOV ramp to the bridge abutment (approximate Station 137+75) and then wrap around to form the abutment and wing walls (see Figure 2B). Wall Nos. 4 and 5 extend from Station 146+00 along the two sides of the proposed HOV ramp to the bridge abutment (approximate station 139+55) and then wrap around to form the abutment and wing walls (see Figure 2C). The total length of each of Wall Nos. 2 and 3 is 930 feet, and the total length of each of Wall Nos. 4 and 5 is 813 feet. The maximum height of Wall Nos. 2 and 3 is about 28 feet with bottom elevations ranging from 950 to 939 feet and top elevations ranging from 957 to 967 feet. The maximum height of Wall Nos. 4 and 5 is about 29 feet with bottom elevations ranging from 967 to 941 feet and top elevations ranging from 973 to 970 feet.</p> <p>It is our understanding that MSE walls are planned for the abutment and wing walls. The type of wall to be used for the HOV ramps will be decided based on ease of construction and construction cost.</p>
Subsurface Features	<p>The subsurface profile (see Figures 7 and 8 and boring logs for W-1 through W-9) along the proposed walls is comprised of fill and residuum underlain by partially weathered rock (PWR). The fill consists of loose to medium dense silty sand and/or soft to stiff sandy silt. Fill material was not encountered at borings W-3, W-8 and W-9. The residual soils consist of very loose to dense silty sand and/or soft to stiff sandy silt underlain by partially weathered rock.</p> <p>Ground water was encountered at borings W-4, W-5 and W-7 between elevations 925 and 934 feet. It should be noted that the borings were performed during an extended dry period, and ground water may be encountered at a higher elevation during construction.</p>

Soil Parameters	<p>The following soil design parameters are recommended for use for the proposed retaining walls:</p> <table><tr><td>Soil Unit Weight</td><td>γ</td><td>=</td><td>125 pcf</td></tr><tr><td>Cohesion</td><td>c</td><td>=</td><td>0 psf</td></tr><tr><td>Angle of Internal Friction</td><td>ϕ</td><td>=</td><td>28 degrees</td></tr><tr><td>Coefficient of Sliding Friction</td><td>μ</td><td>=</td><td>0.40 (MSE wall)</td></tr><tr><td>Coefficient of Sliding Friction</td><td>μ</td><td>=</td><td>0.50 (Cantilever Retaining wall)</td></tr></table> <p>The above design parameters assume the backfill material behind the retaining wall (or MSE wall reinforced fill) to consist of silty sand compacted to the specified density, and the subgrade prepared as recommended below.</p>	Soil Unit Weight	γ	=	125 pcf	Cohesion	c	=	0 psf	Angle of Internal Friction	ϕ	=	28 degrees	Coefficient of Sliding Friction	μ	=	0.40 (MSE wall)	Coefficient of Sliding Friction	μ	=	0.50 (Cantilever Retaining wall)
Soil Unit Weight	γ	=	125 pcf																		
Cohesion	c	=	0 psf																		
Angle of Internal Friction	ϕ	=	28 degrees																		
Coefficient of Sliding Friction	μ	=	0.40 (MSE wall)																		
Coefficient of Sliding Friction	μ	=	0.50 (Cantilever Retaining wall)																		
Recommendations	<p>(i) Soft to very soft sandy silt and loose to very loose silty sand were encountered at or near the retaining wall bottom elevation at a number of locations. Any soft/loose soils from beneath the wall should be over-excavated to a minimum depth of three feet below the wall bottom and replaced with compacted wall backfill material. The exact depth and extent of over-excavation should be determined by the project Geotechnical Engineer.</p> <p>(ii) A maximum allowable bearing pressure of 2,000 psf is recommended for all retaining walls.</p> <p>(iii) It should be noted that the borings for this study were performed during an extended dry period, and ground water may be encountered at or near the wall bottom elevation at some locations. If ground water is encountered, underdrains will be required. The need for any underdrains should be evaluated during construction by the project Geotechnical Engineer</p> <p style="text-align: right;">(continued)</p>																				

Recommendations (continued)	<p>(iv) At the location of maximum wall height, the design bearing pressure for the MSE walls will exceed the above recommended maximum allowable bearing pressure. Therefore, we recommend that the MSE walls be constructed in two stages to minimize differential settlement along the walls. In the first stage, the wall should be constructed to half of its final height. A minimum 45-day waiting period should be allowed after the first stage before beginning the second stage of construction. Settlement of the MSE walls should be monitored upon completion of the first stage of construction. The length of the waiting period may be increased or decreased based on the settlement monitoring data, at the discretion of the project Geotechnical Engineer. After the waiting period, the MSE wall should be constructed to the final height.</p> <p>(v) The backfill materials and drainage measures for the retaining walls should conform to GDOT standard specifications.</p>
Prepared By	Murthy S. Kotha / Sujit K. Bhowmik, PhD, PE
Senior Review By	James L. Wilmer, PE

FIGURES



SCALE: 1" = 200'

DATE: 11/29/2007

DRAWN BY: MUB

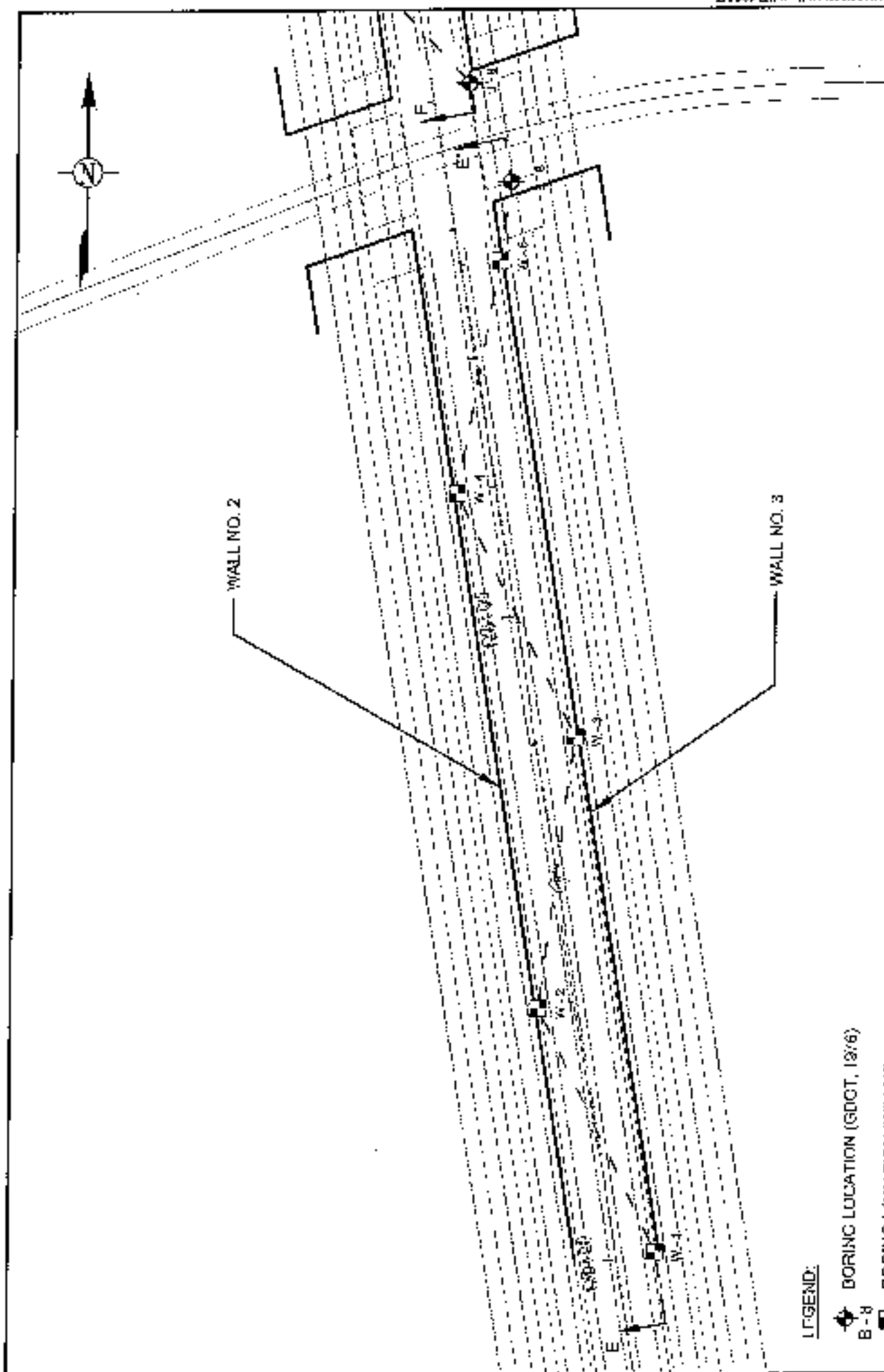
REVIEWED BY: MK



GEOTECHNICAL ENGINEERING
CONSTRUCTION SERVICES
ENVIRONMENTAL, SURVEY AND ENGINEERING
5772 PLEASANTDALE ROAD - SUITE 100
ATLANTA, GA 30340-4270

FIGURE 1
PROJECT LOCATION MAP
1675 OVER OR 171 (BIG SHANTY ROAD)
NORTH-WEST CORRIDOR PROJECT
COBB COUNTY, GEORGIA
WILMER PROJECT No. ATL-7-06530

COOT PROJECT NUMBER
CCKHS-2008-00250
PI No. 000250



LEGEND:

- BORING LOCATION (GDOT, 12/6)
- BORING LOCATION (WILLMER, 2007)
- BORING LOCATION (WILLMER, 2007)

SCALE: 1" = 100'

DATE: 12/6/2007

DRAWN BY: MDR

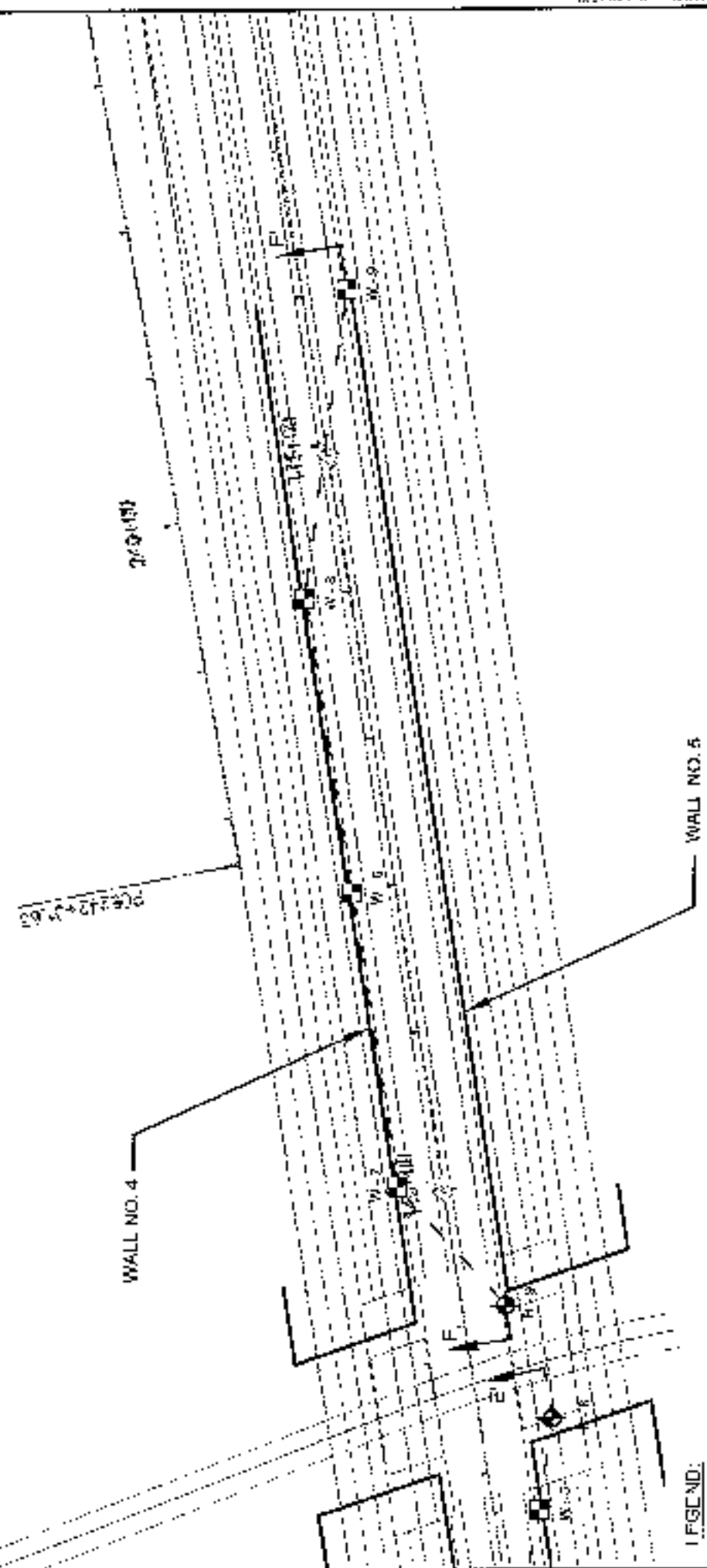
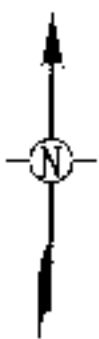
REVIEWED BY: D/K

GDOT PROJECT NUMBER
CSMIS 0001002501
PI No. 009259

FIGURE 20
BORING LOCATION PLAN (WALL NOS. 2 & 3)
LATS OVER CR 11, US 9001 Y ROAD)
NORTH WEST CORRECTOR PROJECT
COBB COUNTY, GEORGIA
WILLMER PROJECT NO. ATL 27-303-AC

WILLMER PROJECT NO. ATL 27-303-AC
BORING LOCATION PLAN (WALL NOS. 2 & 3)
LATS OVER CR 11, US 9001 Y ROAD)
NORTH WEST CORRECTOR PROJECT
COBB COUNTY, GEORGIA

WAVE



LEGEND:

BORING LOCATION (GDOT, 1976)
 BORING LOCATION (WILLMER, 2007)

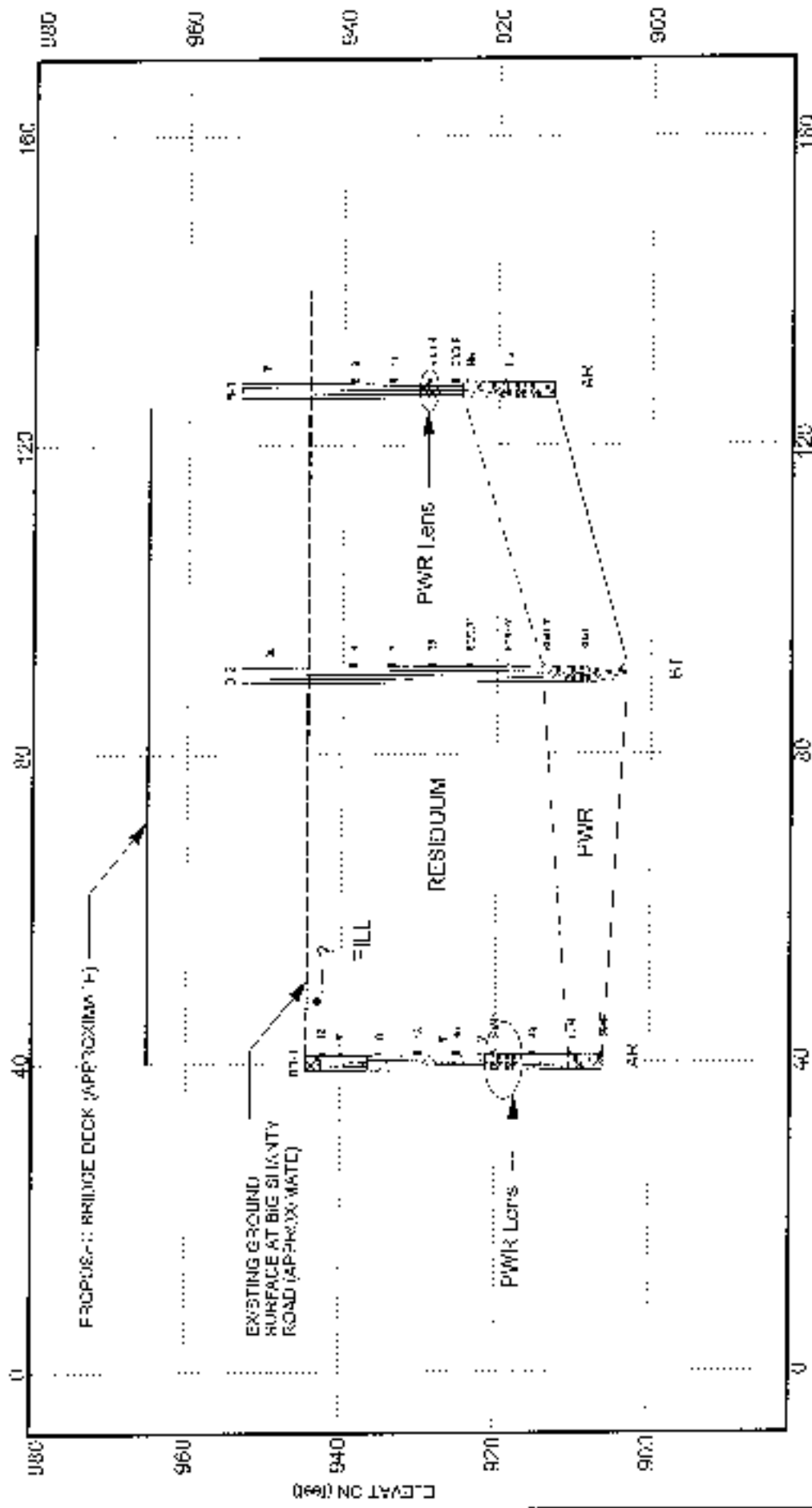
SCALE: 1" = 100'
 DATE: 12/4/2007
 DRAWN BY: NCE
 REVIEWED BY: MK



2007-2008 12-18-2008 12-18-2008 12-18-2008
 12-18-2008 12-18-2008 12-18-2008
 12-18-2008 12-18-2008 12-18-2008

FIGURE 20
 BORING LOCATION PLAN (WALL 1, AREA A & B)
 1:275 OVER OR 17" (BIG SHANTY - KUND)
 NORTH-WEST CORNER PROJECT
 CORB COUNTY, GEORGIA
 WILLMER PROJECT 11, ATL-171-3059C

GDOT PROJECT NUMBER
 CSNI 15 GUCR-01253
 No. 00000000

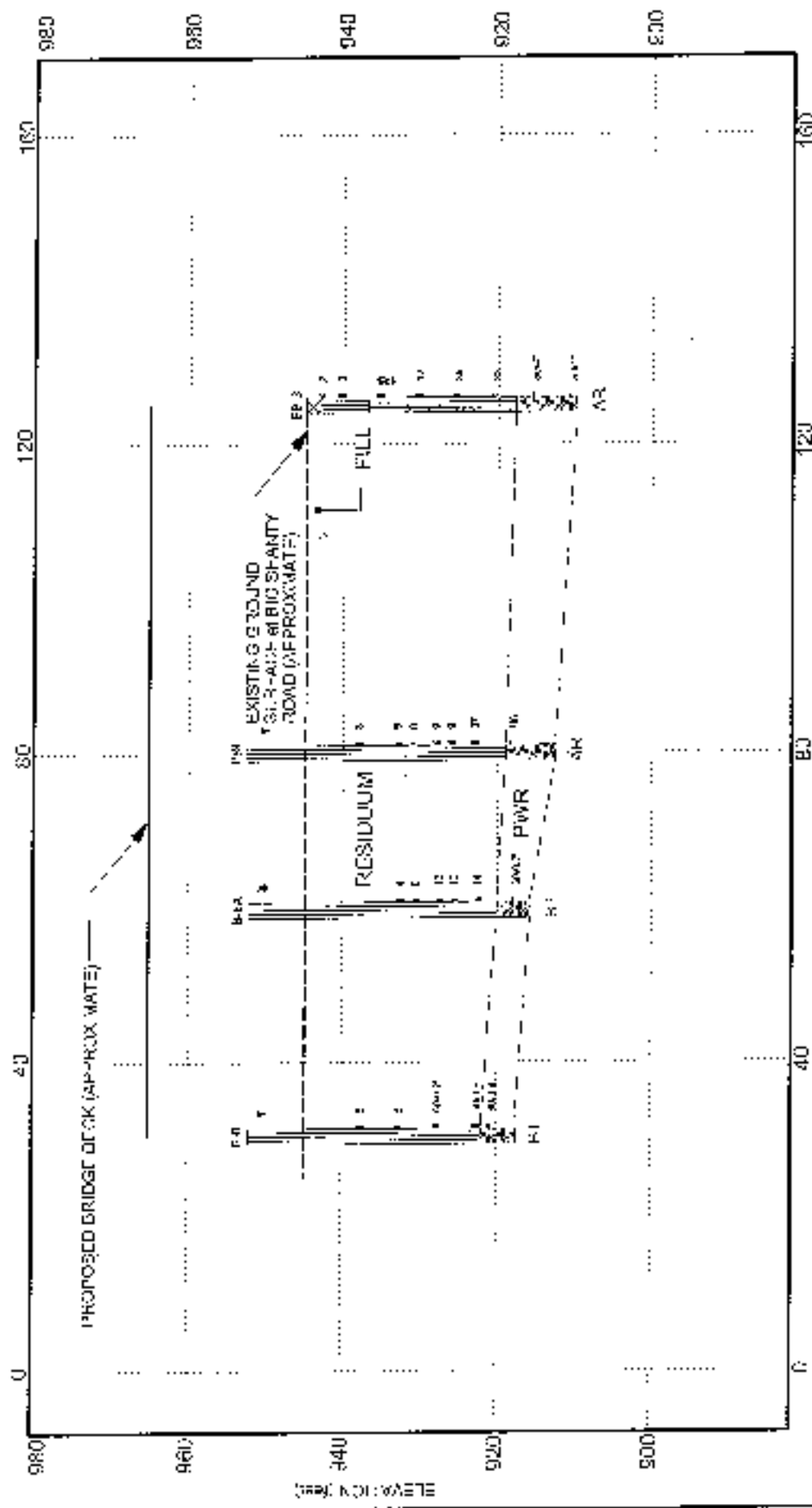


NOTE: Mixings B-2 and H-3 were performed by GDOT on-site.

LEGEND:
 2 - Groundwater Table @ 24 inches
 4 - Groundwater Table @ Time of Heating
 AP - Average Actual
 BT - Boiling Temperature
 PWR - Partially Wetland River
 LfH - Harmer Sources
 RGAIF - 1 inch - 20 feet vertical
 1 inch = 20 feet horizontal

**GENERALIZED SUBSURFACE PROFILE
SECTION A-A' (LT. BRIDGE)**

1475 Ave. CR 171 (Big Shanty Road) GDC (C. Pm) # : CSN-4S-0008 002560 P #: 00000000 Cuba County, Georgia	DATE	SOURCE
1475 Ave. CR 171	Nov 29, 2007	3



GENERALIZED SUBSURFACE PROFILE
SECTION C-C' (RT. BRIDGE)

P-375 L&E CR.171 (D.G. Emery H&M)
GDOT Proj. #: GSNHS-2008-002563, p. 1 of 1008158
Cobb County, Georgia

PROJECT #
171-309EC

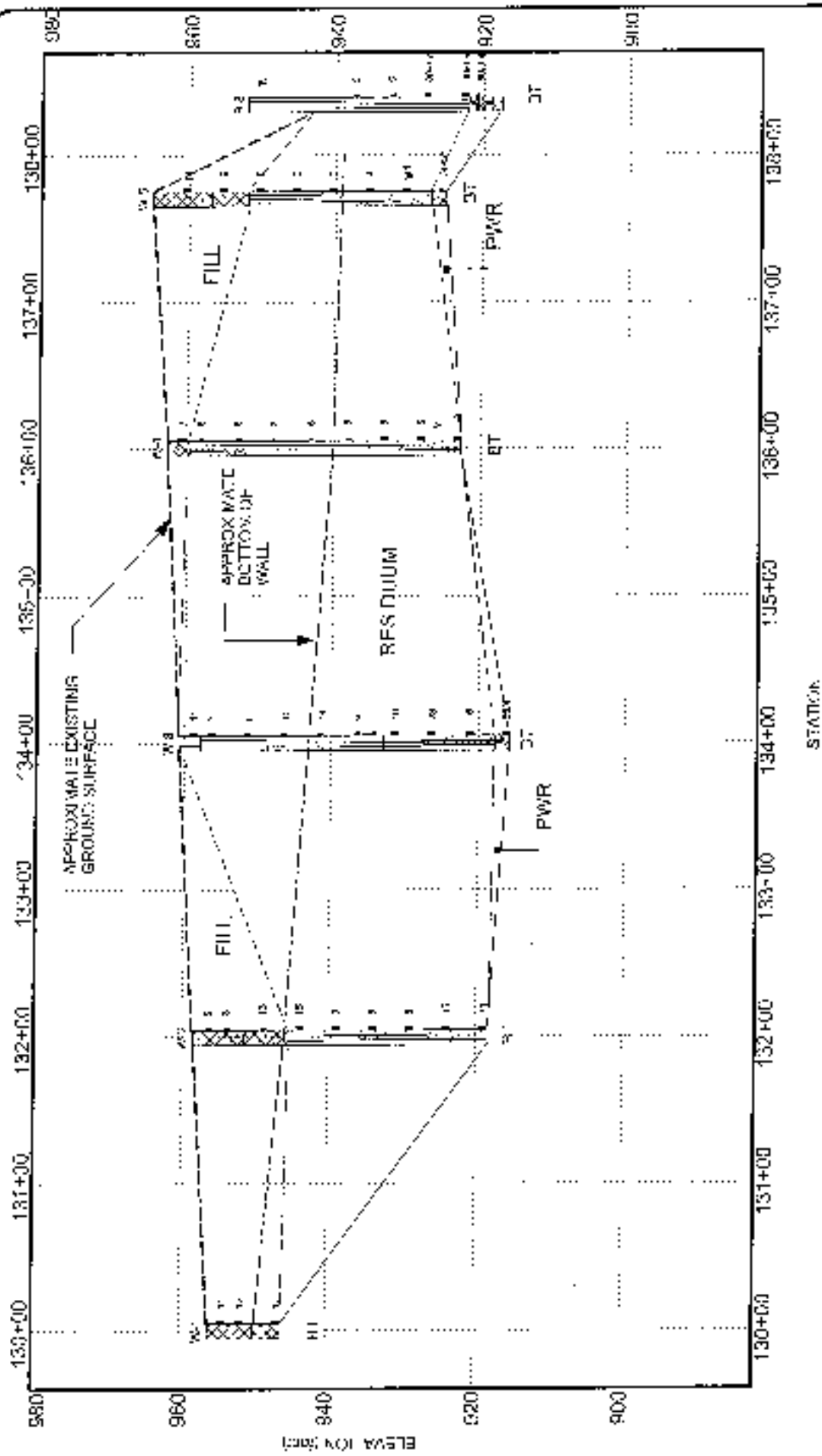
DATE
Nov 29, 2007

SHEET
3

LEGEND:
1 - Groundwater Table @ 24 hours
2 - Groundwater Table @ Time of Boring
AR - Auger Refusal
BI - Boring Termination
PWR - Partially Weathered Rock
R - Hammer Refusal
SCALE: 1" = 20 feet (vertical)
1" = 20 feet (horizontal)

NOTE: Boreholes D.E., D-6A and B-6 were performed by GDOT in 1973.

DISTANCE (feet)



GENERALIZED SUBSURFACE PROFILE
SECTION E-E' (Wall Nos. 2 and 3)

1.5% over CR 171 (Dix Shandy Road)
 GDOT Proj. #: GSK-48-100R-60(255); PI #: 00002311
 Collier County, Georgia

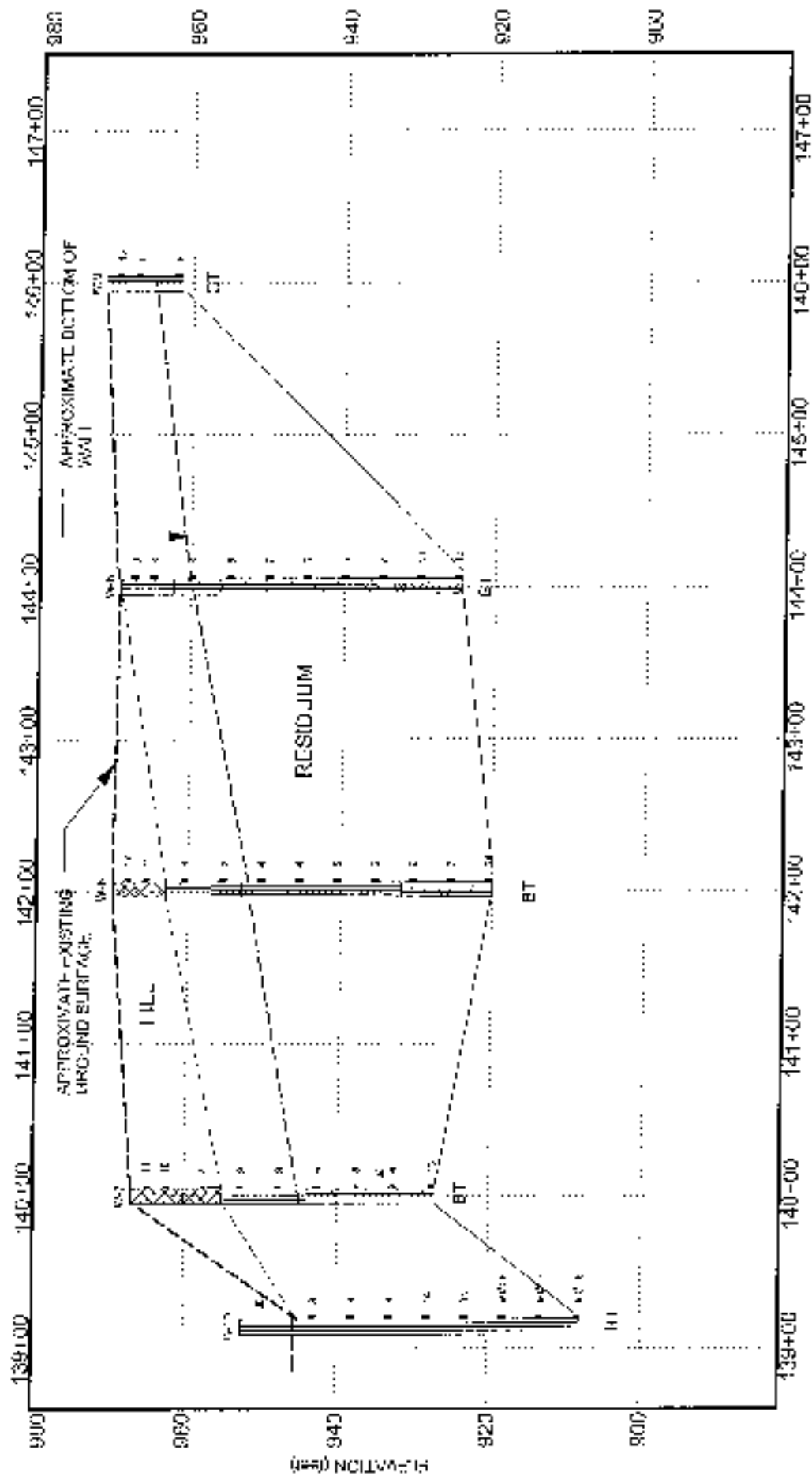
PROJECT #	DATE	FILELINE
171-3029C	March 1, 2007	7

LEGEND:

- ▲ - Groundwater Table (0.24 hours)
- ▽ - Groundwater Table (60 minutes)
- 8" - Doring Terminals
- PWR - Partially Weathered Rock

SCALE: 1" = 20 feet (vertical)
 1 inch = 100 feet (horizontal)

NOTE: Boring 3.8 was performed by SDOT in 1976.



STATION

NOTE: During 1-10 was performed by GDOT in 1976.

LEGEND:
 T - Contourwater Table @ 24 hours
 G - Groundwater Table @ Time of Borings
 BT - Boring Terminates
 SCALE: 1 ft = 25 feet (vertical)
 1 inch = 100 feet (horizontal)

**GENERALIZED SUBSURFACE PROFILE
 SECTION F-F' (WALL Nos. 4 and 5)**

1-575 over Dig Shanty Road
 GDOT Proj. #: CEVHS-0508 03/25/83; PI #: 0508258
 Calhoun County, Georgia

PROJECT	DATE	FIGURE
171-329AC	Nov 26, 2007	3

APPENDIX I



BORING RECORD LEGEND

SM, CL, etc: GROUP SYMBOL, based on Unified Soil Classification System.
(Refer to ASTM D-2485 and Table 1 of D-2487)

N-VALUE: BLOWS PER FOOT Standard Penetration Resistance (SPT) blow count,
the sum of the second and third 6-inch increments of the SPT test.
(Refer to ASTM D-1586)

CONSISTENCY / RELATIVE DENSITY Correlated with SPT Blow Count, N:

SILTS AND CLAYS

<u>N</u> <u>(blows per foot)</u>	<u>Consistency</u>
0 - 2	Very Soft
3 - 4	Soft
5 - 8	Firm
9 - 15	Stiff
16 - 30	Very Stiff
31 - 50	Hard
> 50	Very Hard

SANDS

<u>N</u> <u>(blows per foot)</u>	<u>Relative Density</u>
0 - 4	Very Loose
5 - 10	Loose
11 - 30	Medium Dense
31 - 50	Dense
> 50	Very Dense

NOTES:

Groundwater Measurement is:



Water level at time of jackling

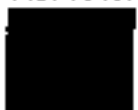


Water level at time of boring



Caved level at 24 hours

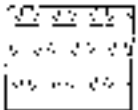
ASPHALT



CONCRETE



TOPSOIL



FILL



GW



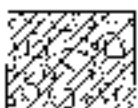
GP



GM



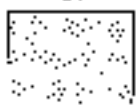
GC



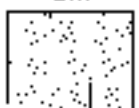
SW



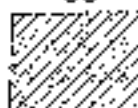
SP



SM



SC



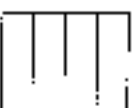
SANDY SILT



SANDY CLAY



ML



MH



CL ML



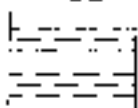
CL



CH



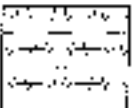
OL



OH



PEAT



PWR



ROCK





Willmer Engineering Inc.
3772 Pleasantdale Road, Suite 165
Atlanta, Georgia 30340

UNIFIED SOIL CLASSIFICATION SYSTEM REFERENCE SHEET

MAJOR DIVISIONS			LETTER SYMBOL	TYPICAL DESCRIPTIONS	
COARSE GRAINED SOILS MORE THAN 50% OF MATERIAL IS <u>LARGER</u> THAN #200 SIFVF SIZE	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS LITTLE OR NO FINES	(GW)	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES	
			(GP)	POORLY GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES	
	MORE THAN 50% OF COARSE FRACTION <u>RETAINED</u> #4 SIEVE	GRAVELS WITH FINES APPRECIABLE AMOUNT OF FINES	(GM)	SILTY GRAVELS and GRAVEL-SAND-SILT MIXTURES	
			(GC)	CLAYEY GRAVELS and GRAVEL-SAND-CLAY MIXTURES	
	SAND AND SANDY SOILS	CLEAN SAND LITTLE OR NO FINES	(SW)	WELL GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES	
			(SP)	POORLY GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES	
		MORE THAN 50% OF COARSE FRACTION <u>PASSING</u> #4 SIFVF	SANDS WITH FINES APPRECIABLE AMOUNT OF FINES	(SM)	SILTY SANDS and SAND-SILT MIXTURES
				(SC)	CLAYEY SANDS and SAND-CLAY MIXTURES
FINE GRAINED SOILS MORE THAN 50% OF MATERIAL IS <u>SMALLER</u> THAN #200 SIEVE SIZE	SILTS AND CLAYS LIQUID LIMIT <u>LESS</u> THAN 50	(ML)	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR VERY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY		
		(CL)	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS		
		(OL)	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY		
	HIGHLY ORGANIC SOILS	SILTS AND CLAYS LIQUID LIMIT <u>GREATER</u> THAN 50	(MH)	INORGANIC ELASTIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS	
(CH)			INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS		
(OH)			ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS		
			(PT)	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS	



ENGINEERING DESCRIPTION OF ROCK HARDNESS

Hardness	Description
Very hard	Cannot be scratched with knife or sharp pick. Breaking of hand specimens requires several hard blows of geologist's pick.
Hard	Can be scratched with knife or pick only with difficulty. Hard blow of hammer required to detach hand specimen.
Moderately hard	Can be scratched with knife or pick, can be excavated by hard blow of point of a geologist's pick. Hand specimens can be detached by moderate blow.
Medium	Can be grooved or gouged 1/16 inch deep by firm pressure on knife or pick point. Can be excavated in small chips to pieces about 1 inch maximum size by hard blows of the point of a geologist's pick.
Soft	Can be gouged or grooved readily with knife or pick point. Can be excavated in chips to pieces several inches in size by moderate blows of a pick point. Small thin pieces can be broken by finger pressure.
Very soft	Can be carved with knife. Can be excavated readily with point of pick. Pieces 1 inch or more in thickness can be broken with finger pressure. Can be scratched readily by fingernail.
Partially Weathered Rock	For engineering purposes, partially weathered rock (PWR) is locally defined as residual soils exhibiting Standard Penetration Test N-values in excess of 50 blows for 6 inches of penetration.



Project: I-575 over CR 171 (Big Shanty Road)				HOLE No. BB-1 Sheet 1 of 1	
Location: Cobb County, Georgia				Location: Bent - 1, LT Bridge	
Project Number: 171-3099C; GDOT Proj. # : GSNHS-0008-00(256); PI # : 0008256					
Azimuth: —		Angle from Horizontal: 90		Surface Elevation (ft): 944.48	
Station: 138+00, 115' Lt. of CL		Drilling Equipment: CME 550			
Drilling Method: HSA Auto Hammer		Core Boxes: —			
Samples: 9		Cyrometer (ft): 38.5		Rock (ft): —	
Total Depth (ft): 38.5		Logged By: MK			
Date Drilled: 9/26/07					

VERTICAL DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE	RQCZ	RQCZ	MATERIAL DESCRIPTION	ELEVATION (feet)	STANDARD PENETRATION TEST DATA (blows/foot)	N-VALUE
0					FILL : Medium dense reddish brown silty medium to fine SAND with gravel	944.5		2
5		SS			RESIDUUM : Firm gray and brown medium to fine sandy SILT (micaceous)	940		7
10		SS			Loose to dense gray, brown and black silty medium to fine SAND (slightly micaceous)	935		8
15		SS				930		13
20		SS				925		35
25		SS			PARTIALLY WEATHERED ROCK : Sampled as very dense brown, white and tan silty coarse to fine SAND with rock fragments	920		50/4"
30		SS			RESIDUUM : Dense brown, white and tan silty coarse to fine SAND	915		49
35		SS			PARTIALLY WEATHERED ROCK : Sampled as very dense black and tan silty coarse to fine SAND with rock fragments	910		50/4"
38.5		SS						52/5"

Auger refusal encountered @ 38.5 feet below existing ground surface.

Groundwater was encountered @ 23 feet below existing ground surface @ time of boring completion and @ 18 feet below existing ground surface @ 24 hours after boring completion.

SAMPLER TYPE SS - Split Spoon ST - Shelby Tube NR - Rock Core, 1-7/8"		DRILLING METHOD HSA - Helmer Stem Auger CFA - Continuous Flight Augers DC - Driving Casing		Hole No. <div style="text-align: center; font-weight: bold; font-size: 1.2em;">BB-1</div>	
---	--	--	--	---	--



Project: I-575 over CR 171 (Big Shanty Road) Location: Cobb County, Georgia Project Number: 171-30990; GDOT Proj. #: CSNHS-0008-00(256); PI #: 0008256						HOLE No. BB-2 Sheet 1 of 1 Location: Bent - 2, LT Bridge	
Azimuth: -- Angle from Horizontal: 90 Surface Elevation (ft): 943.61 Station: 139+00, 115' Lt. of CL							
Drilling Equipment: CME 550 Drilling Method: HSA Auto Hammer							
Core Boxes: -- Samples: 8 Overburden (ft): 30 Rock (ft): -- Total Depth (ft): 30.0							
Logged By: MK Date Drilled: 9/28/07							

VERTICAL DEPTH (ft)	GRAPHIC LOG	SAMPLER TYPE	H ₂ O %	HOLD %	MATERIAL DESCRIPTION	ELEVATION (feet)	STANDARD PENETRATION TEST DATA (blows/foot)	S-VALUE
					TOPSOIL = 1 inch	943.6		1
5		SS			ILL: Loose reddish brown silty medium to fine SAND with graded aggregate base	943		2
10		SS			RESIDUUM: Very soft reddish brown and tan medium to fine sandy SILT (slightly micaceous)	935		2
15		SS			Loose to dense gray, white and tan silty medium to fine SAND (slightly micaceous)	930		3
20		SS				925		21
25		SS				920		31
30		SS			PARTIALLY WEATHERED ROCK: Sampled as very dense brown, white and tan silty medium to fine SAND with rock fragments Auger refusal encountered @ 30 feet below existing ground surface. Groundwater was encountered @ 20 feet below existing ground surface @ time of boring completion and @ 18 feet below existing ground surface @ 24 hours after boring completion.	915		50-M
		SS						52-M

SAMPLER TYPE SS - Split Spoon ST - Shelby Tube RC - Rock Core 1-7/8"	DRILLING METHOD HSA - Hollow Stem Auger CFA - Continuous Flight Augers UC - Driving Casing	Hole No. BB-2
--	--	--------------------------------



Project: I-575 over CR 171 (Big Shanty Road) Location: Cobb County, Georgia Project Number: 171-3099C; GDOT Proj. #: CSNHS-0008-00(256); PI #: 0008256						HOLE No. BB-3 Sheet 1 of 1 Location: Bent - 1; RT Bridge	
Azimuth: -- Angle from horizontal: 90 Surface Elevation (ft): 945.03 Station: 138+32, 115' Rt. of CL							
Drilling Equipment: CME 550 Drilling Method: HSA Auto Hammer							
Core Boxes: -- Samples: 8 Overburden (ft): 35 Rock (ft): -- Total Depth (ft): 35.0							
Logged By: MK Date Drilled: 9/26/07							

VERTICAL DEPTH (ft)	LOG	SAMPLER TYPE	REMARKS	ROD #	MATERIAL DESCRIPTION	ELEVATION (feet)	STANDARD PENETRATION TEST DATA (blows/foot)	N-VALUE
0					FILL: Very loose reddish brown silty medium to fine SAND with gravel RESIDUUM: Soft reddish brown medium to fine sandy SILT (micaceous)	945.0		
2	SS					944.0		2
3	SS					943.0		3
10	SS				Very loose to dense gray, brown and white silty medium to fine SAND (slightly micaceous)	935.0		3
15	SS					930.0		12
20	SS					925.0		35
25	SS					920.0		32
30	SS				PARTIALLY WEATHERED ROCK: Sampled as very dense black, white and tan silty coarse to fine SAND with rock fragments	915.0		50/4
35	SS							52/1
Auger refusal encountered @ 35 feet below existing ground surface. Groundwater was encountered @ 11 feet below existing ground surface @ time of boring completion and @ 10 feet below existing ground surface @ 24 hours after boring completion								

SAMPLER TYPE SS - Split Sampler ST - Shelby Tube NC - Rock Core, 1-7/8"	DRILLING METHOD HSA - Hollow Stem Auger CTA - Continuous Flight Augers DC - Driving Casing	ROD No. BB-3
---	--	-------------------------------



Project: 1-575 over CR 171 (Big Shanty Road)				HOLE No. BB-4	
Location: Cobb County, Georgia				Sheet 1 of 1	
Project Number: 171-3099C; GDOT Proj. #: CSNHS-0008-00(256); PI #: 0008256				Location: Bent - 2, RT Bridge	
Azimuth: --		Angle from Horizontal: 90		Surface Elevation (ft): 945.11 Station: 139+35, 115' Rt. of CL	
Drilling Equipment: CME 550		Drilling Method: HSA Auto Hammer			
Core Boxes: --		Samples: 10		Overburden (ft): 42 Rock (ft): -- Total Depth (ft): 42.0	
Logged By: MK		Date Drilled: 9/28/07			

VERTICAL DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE	REG %	ROD %	MATERIAL DESCRIPTION	ELEVATION (feet)	STANDARD PENETRATION TEST DATA (blows/foot)	NOVA LOG
					TOPSOIL = 2 inches / FILL	945.1		
5		SS			FILL: Loose reddish brown and tan silty medium to fine SAND and graded aggregate base	945	4	
10		SS			RESIDUUM: Soft and firm brown, white and tan medium to fine sandy SILT	940	3	
15		SS			Medium dense to dense black, brown white and tan silty medium to fine SAND (slightly micaceous)	935	7	
20		SS				930	12	
25		SS				925	20	
30		SS				920	25	
35		SS				915	48	
40		SS			Dense brown, white and tan silty medium to fine SAND with rock fragments (slightly micaceous)	910	42	
42		SS			PARTIALLY WEATHERED ROCK: Sampled as very dense brown, white and tan silty medium to fine SAND with rock fragments	905	18	
					Auger refusal encountered @ 42 feet below existing ground surface.			
					Groundwater was encountered @ 15 feet below existing ground surface @ time of boring completion and @ 14 feet below existing ground surface @ 24 hours after boring completion.			

SAMPLER TYPE SS - Split Spoon NX - Rock Core, 2-1/8" ST - Shelby Tube CU - Cullings NQ - Rock Core, 1-7/8" CT - Continuous Tube		DRILLING METHOD HSA - Hollow Stem Auger RW - Rotary Wash CFA - Continuous Flight Augers RC - Rock Core DC - Driving Casing		Hole No <div style="text-align: center; font-weight: bold; font-size: 1.2em;">BB-4</div>
--	--	--	--	---



Project: I-575 over CR 171 (Big Shanty Road) Location: Cobb County, Georgia Project Number: 171-3088C; GDOT Proj. #: CSNHS-0008-00(256); PI #: 0008256						HOLE No. W-1 Sheet 1 of 1 Location: Wall No. 3			
Azimuth: --		Angle from Horizontal: 90		Surface Elevation (ft): 956.23		Station: 130+00, 30' Rt. of CL			
Drilling Equipment: CME 550				Drilling Method: HSA Auto Hammer					
Cores Bored: --		Samples: 3		Overburden (ft): --		Rock (ft): --			
Logged By: MK				Date Drilled: 10/3/07					
VERTICAL DEPTH (ft)	GRAPHIC LOG	SMP F TYPE	RQC %	RQC %	MATERIAL DESCRIPTION	ELEVATION (feet)	STANDARD PENETRATION TEST DATA (blows/foot)	N-VALUE	
					TOPSOIL = 1 inch / FILL	956.2			
		SS			Fill: Medium dense reddish brown and tan silty medium to fine SAND	955		11	
5		SS			Stiff reddish brown medium to fine sandy SILT	950		12	
10		SS						13	
Boring terminated @ 10 feet below existing ground surface Groundwater was not encountered @ time of boring completion.						Bottom of Wall			
Empty grid for additional data									
SAMPLER TYPE SS - Split Spoon ST - Shelby Tube NC - Rock Core, 1-7/8"					DRILLING METHOD ISA - Iowa Stem Auger CFA - Continuous Flight Auger DC - Driving Casing				
RQC - Rotary Wash RC - Rock Core					Hole No: W-1				



Project: I-575 over CR 171 (Big Shanty Road) Location: Cobb County, Georgia Project Number: 171-3099C; GDOT Proj. #: CSNHS-0008-00(258); PI #: 0008256						HOLE No. W-2 Sheet 1 of 1 Location: Wall No. 2			
Azimuth: -- Angle from Horizontal: 90 Surface Elevation (ft): 958.48 Station: 132+00, 30' Lt. of CL						Drilling Equipment: CME 550 Drilling Method: HSA Auto Hammer			
Core Boxes: -- Samples: 9 Overburden (ft): -- Rock (ft): -- Total Depth (ft): 40.0						Logged By: NK Date Drilled: 10/3/07			
VERTICAL DEPTH (ft)	GRAPHIC LOG	SAMPLER TYPE	H-C %	FOD %	MATERIAL DESCRIPTION	ELEVATION (feet)	STANDARD PENETRATION TEST DATA (blows/foot)	N-VALUE	
0		SS			TOPSOIL = 1 inch / FILL	958.5	5	0	
5		SS			FILL: Loose reddish brown and tan silty medium to fine SAND	955	10	0	
10		SS			Stiff reddish brown medium to fine sandy SILT	950	15	13	
15		SS			RESIDUUM: Stiff reddish-brown and tan medium to fine sandy SILT	945	20	10	
20		SS			Loose tan, brown and gray silty medium to fine SAND (micaceous)	940	25	9	
25		SS			Loose to Jersey brown, white and tan silty medium to fine SAND (micaceous)	935	30	8	
30		SS				930	35	5	
35		SS				925	40	15	
40		SS				920	45	34	
Boring terminated @ 40 feet below existing ground surface. Groundwater was not encountered @ time of boring completion.						Bottom of Wall			
SAMPLER TYPE SS - Split Spoon ST - Shelby Tube MC - Rock Core 1-7/8"						DRILLING METHOD HSA - Hollow Stem Auger CFA - Continuous Flight Augers DC - Driving Casing		Hole No. W-2	



Project: I-575 over CR 171 (Big Shanty Road) Location: Cobb County, Georgia Project Number: 171-3089G; GDOT Proj. #: CSNHS-0008-00(256); PI #: 0008256						HOLE No. W-3 Sheet 1 of 1 Location: Wall No. 3	
Azimuth: -- Angle from Horizontal: 90 Surface Elevation (ft): 960.76 Station: 134+00, 30' Rt. of CL							
Drilling Equipment: CME 550 Drilling Method: HSA Auto Hammer							
Cora Boxes: -- Samples: 11 Overburden (ft): -- Rock (ft): -- Cora Depth (ft): 45.0							
Logged By: MK Date Drilled: 10/3/07							

VERTICAL DEPTH (ft)	GRAPHIC LOG	SAMPLER TYPE	R-10%	R-10%	MATERIAL DESCRIPTION	ELEVATION (ft)	STANDARD PENETRATION TEST DATA (blows/foot)	SPT VALUE
					TOPSOIL = 1 inch	960.3		
0	SS				RESIDUAL Medium dense reddish brown and tan silty medium to fine SAND	958	12	11
5	SS				Firm reddish brown and tan medium to fine sandy SILT (slightly micaceous)	955	15	7
12	SS				Medium dense brown, white and tan silty medium to fine SAND	950	18	11
15	SS					945	15	15
20	SS				Stiff brown, white and tan medium to fine sandy SILT	940	12	14
25	SS ST					935	8	8
30	SS				Silt; gray, orange and brown medium to fine sandy SILT (slightly micaceous)	932	10	10
35	SS				Medium dense gray, black and tan silty medium to fine SAND (slightly micaceous)	925	24	24
40	SS					920	16	16
45	SS				PARTIALLY WEATHERED ROCK: Sampled as very dense gray, white and black silty medium to fine SAND with rock fragments Boring terminated @ 45 feet below existing ground surface. Groundwater was not encountered @ time of boring completion.	910	EQ-1	

SAMPLER TYPE SS - Split Spoon ST - Shelby Tube NC - Rock Core (1-2")	DRILLING METHOD HSA - Hollow Stem Auger CFA - Continuous Flight Auger DC - Driving Casings	Notes RW - Rotary Wash RC - Rock Core
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Project: I-575 over CR 171 (Big Shanty Road) Location: Cobb County, Georgia Project Number: 171-3099C; GDOT Proj. #: CSNHS-0008-00(256); PI #: 0008256						HOLE No. W-4 Sheet 1 of 1 Location: Wall No. 2	
Azimuth: -- Angle from Horizontal: 90 Surface Elevation (ft): 962.73 Station: 136+00, 30' L.L. of CL							
Drilling Equipment: CME 550		Drilling Method: HSA Auto Hammer					
Core Boxes: -- Samples: 9		Overburden (') -- Rock (ft): --		Total Depth (ft): 40.0			
Logged By: MK		Date Drilled: 10/3/07					

VERTICAL DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE	REC%	ROD %	MATERIAL DESCRIPTION	ELEVATION (feet)	STANDARD PENETRATION TEST DATA (blows/foot)	N-VALUE
					TOPSOIL - 1 inch / FILL	952.7		
5		SS			FILL: Loose reddish brown and tan silty medium to fine SAND (slightly micaceous)	960		7
10		SS			RESIDUUM: Loose red, brown, white and tan silty medium to fine SAND (micaceous)	955		6
15		SS				950		8
20		SS				945		9
25		SS				940		6
30		SS				935		6
35		SS				930		6
40		SS				925		10

Boring terminated @ 40 feet below existing ground surface.

Groundwater was encountered @ 37 feet below existing ground surface @ time of boring completion.

Bore hole caved in to 24 feet below existing ground surface @ 24 hours after boring completion.

Bottom of Wall

SAMPLER TYPE SS - Split Spear ST - Shelby Tube NC - Rock Core, 1-7/8"	DRILLING METHOD NX - Rock Core, 2-1/8" CU - Cuttings CT - Continuous Tube HSA - Hollow Stem Auger CFA - Continuous Flight Auger DC - Driving Casing	R/W - Rotary Wash RC - Rock Core Hole No. <div style="text-align: right; font-weight: bold;">W-4</div>
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Project: I-575 over CR 171 (Big Shanty Road) Location: Cobb County, Georgia Project Number: 171-3099C; GDOT Proj. #: CSNHS-0008-00(256); PI #: 0008256						HOLE No. W-5 Sheet 1 of 1 Location: Wall No. 3	
Azimuth: -- Angle from Horizontal: 90 Surface Elevation (ft): 964.98 Station: 137+70, 30' Rt. of CL							
Drilling Equipment: CME 550 Drilling Method: HSA Auto Hammer							
Core Boxes: -- Samples: 8 Overburden (ft): -- Rock (%): -- Total Depth (ft): 40.0							
Logged By: MK Date Drilled: 10/3/07							

VERTICAL DEPT. (ft)	CORRECTION	SAMPLE TYPE	REG. NO.	ROD NO.	MATERIAL DESCRIPTION	ELEVATION (feet)	STANDARD PENETRATION TEST DATA (blows/foot)	S-VALUE
5		SS			FILL: Medium dense reddish brown silty coarse to fine SAND with organic odor and rock fragments	965.0		
10		SS			Loose reddish brown and gray clayey medium to fine SAND with organic odor	955.0		14
15		SS			RESIDUAL: Firm and soil gray, red and tan medium to fine sandy SILT (micaceous)	950.0		9
20		SS				945.0		3
25		SS			Very loose and medium dense gray, orange-brown and black silty medium to fine SAND (slightly micaceous)	940.0		3
30		SS				935.0		4
35		SS				930.0		11
40		SS			PARTIALLY WEATHERED ROCK: Sampled as very coarse black orange-brown and gray silty med um to fine SAND	925.0		62.5

Boring terminated @ 40 feet below existing ground surface.

Groundwater was encountered @ 35 feet below existing ground surface @ time of boring completion.

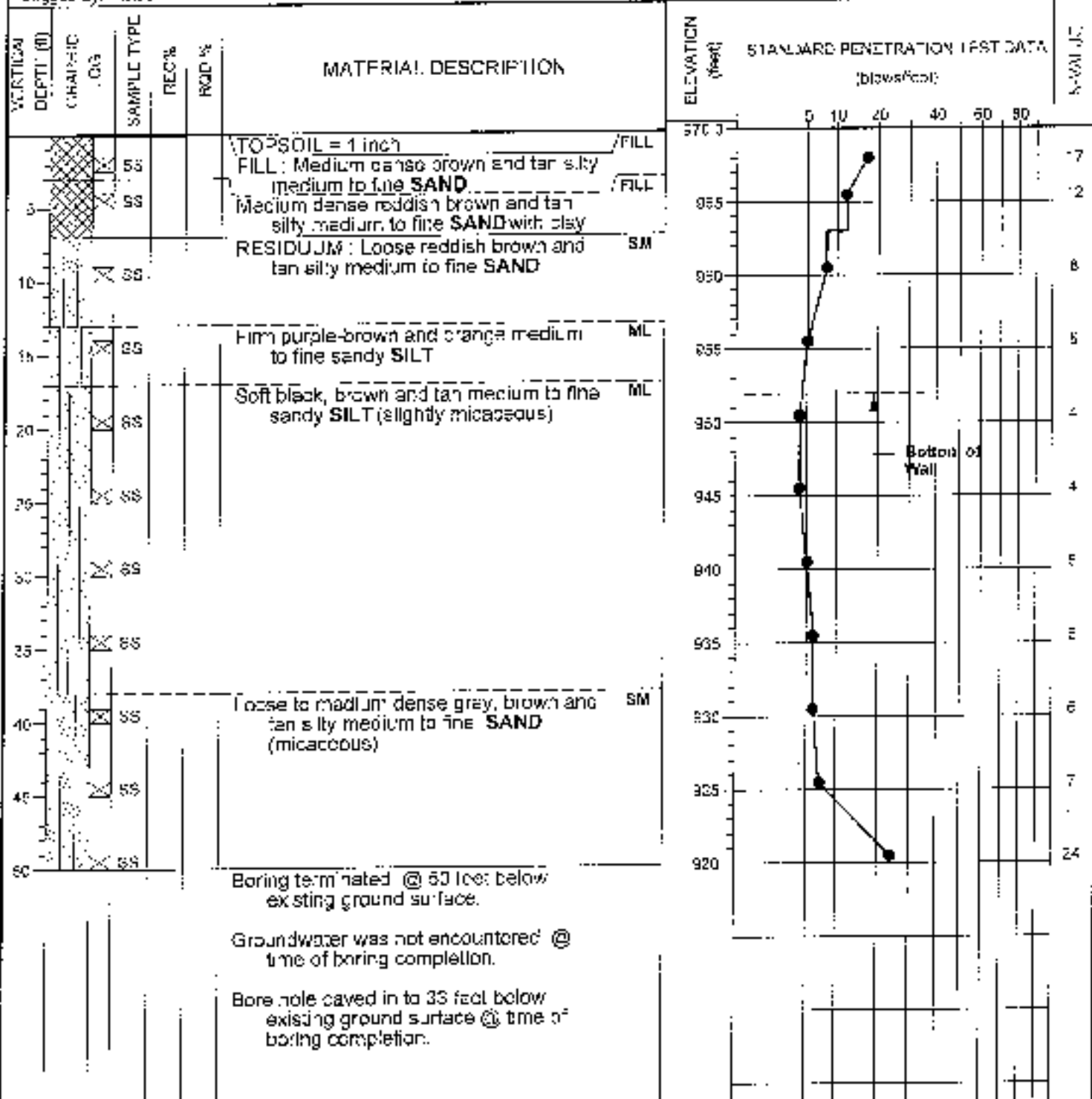
Bore hole caved in to 24 feet below existing ground surface @ 24 hours after boring completion.

SAMP. TYPE SS - Split Spoon ST - Shelby Tube NC - Rock Core, 1-7/8"		SAMP. TYPE NX - Rock Core 2 1/8" CU - Cullings CT - Continuous Tube		DRILLING METHOD HSA - Hollow Stem Auger CFA - Continuous Flight Augers DC - Driving Casing		H&W - Rotary Wash RC - Rock Core Hole No: <div style="text-align: center; font-weight: bold; font-size: 1.2em;">W-5</div>	
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171-3099C-001-24027



Project: I-575 over CR 171 (Big Shanty Road)				HOLE No. W-6	
Location: Cobb County, Georgia				Sheet: 1 of 1	
Project Number: 171-3099C; GDOT Proj. #: CSNHS-0008-00(256); PI #: 0008256				Location: Wall No. 4	
Azimuth: --		Angle from Horizontal: 90		Surface Elevation (ft): 969.98	
Station: 142+00, 30' Lt. of CL					
Drilling Equipment: CME 550		Drilling Method: HSA Auto Hammer			
Core Boxes: --		Samples: 11		Overburden (ft): --	
Rock (ft): --		Total Depth (ft): 50.0			
Logged By: MK		Date Drilled: 10/2/07			



SAMPLER TYPE SS - Soil Spoon NX - Rock Core, 2-1/2" ST - Shelby Tube CU - Cuttings NQ - Rock Core, 1 1/2" CT - Continuous Tube		DRILLING METHOD HSA - Hollow Stem Auger RW - Rotary Wash CFA - Continuous Flight Augers RC - Rock Core CC - Graving Casing		Hole No. <div style="font-size: 1.5em; font-weight: bold;">W-6</div>
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ADAPT FOR TOWER 10/2/07



Project: I-575 over CR 171 (Big Shanty Road) Location: Cobb County, Georgia Project Number: 171-3099C; GDOT Proj. #: CSNHS-0008-00(256); PI #: 0008256						HOLE No. W-7 Sheet 1 of 1 Location: Wall No. 4	
Azimuth: —		Angle from Horizontal: 00		Surface Elevation (ft): 987.10		Station: 140+00, 30' Lt. of CL	
Drilling Equipment: CME 550				Drilling Method: HSA Auto Hammer			
Core Boxes: —		Samples: 10		Overburden (ft): —		Rock (ft): —	
Logged By: MK				Date Drilled: 10/2/07			

VERTICAL DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE	H-CSS	H-CO %	MATERIAL DESCRIPTION	ELEVATION (feet)	STANDARD PENETRATION TEST DATA (blows/foot)	N-VALUE
0		SS			TOPSOIL= 1 inch	987.1		
0		SS			FILL: Stiff reddish brown medium to fine sandy SILT	985		11
0		SS				980		10
0		SS			Soft brown and tan medium to fine sandy SILT	965		2
0		ST				955		7
15		SS			RESIDUUM. Stiff to soft brown and gray medium to fine sandy SILT (micaceous)	950		3
23		SS				945		5
25		SS			Loose and medium dense brown brown black and tan silty medium to fine SAND (micaceous)	940		5
30		SS				935		5
35		SS				930		13
40		SS						

Boring terminated @ 40 feet below existing ground surface.

Groundwater was encountered @ 33 feet below existing ground surface @ time of boring completion.

Bore hole caved in to 24 feet below existing ground surface @ 24 hours after boring completion.

Bottom of Wall

SS - Split Spoon ST - Shelby Tube NC - Rock Core, 1-1/4"		VV - Rock Core, 2-1/8" CU - Cuttings CT - Continuous Tube		HSA - Hollow Stem Auger CFA - Continuous Flight Augers TC - Driving Cassing		RW - Rotary Wash RC - Rock Core		Hole No. W-7
--	--	---	--	---	--	------------------------------------	--	------------------------



Project: I-575 over CR 171 (Big Shanty Road) Location: Cobb County, Georgia Project Number: 171-3099C; GDOT Proj. #: CSNHS-0003-00(256); PI #: 0008256				HOLE No. W-8 Sheet 1 of 1 Location: Wall No. 4	
Azimuth: -- Angle from Horizontal: 90 Surface Elevation (ft): 969.34 Station: 144+00, 30' Lt. of CL					
Drilling Equipment: GME 550		Drilling Method: HSA Auto Hammer			
Core Boxes: -- Samples: 5		Overburden (ft): -- Rock (ft): --		Total Depth (ft): 45.0	
Logged By: MK		Date Drilled: 10/2/07			

VERTICAL DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE	SCL %	RCL %	MATERIAL DESCRIPTION	ELEVATION (feet)	STANDARD PENETRATION TEST DATA (blows/ft)	N-VALUE
0					(TOPSOIL = 2 inches) ML	969.34		
0					RESIDUUM : Stiff to firm brown coarse to fine sandy SILT (micaceous)			
10					Loose to dense purple, brown and tan silty medium to fine SAND (micaceous)			
15								
20								
25								
30								
35								
40								
45								
Boring terminated @ 45 feet below existing ground surface.								
Groundwater was not encountered @ time of boring completion.								
Bore hole caved in to 30 feet below existing ground surface @ time of boring completion.								

SAMPLER TYPE SS - Split Spoon NX - Rock Core, 2-1/2" ST - Shelby Tube CU - Cuttings VQ - Rock Core, 1-7/8" CT - Continuous Tube	DRILLING METHOD HSA - Hollow Stem Auger RW - Rotary Wash CFA - Continuous Flight Augers RC - Rock Core DC - Drilling Casing	Hole No. <div style="text-align: right; font-weight: bold; font-size: 1.2em;">W-8</div>
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Project: I-575 over CR 171 (Big Shanty Road) Location: Cobb County, Georgia Project Number: 171-3099C; GDOT Proj. #: CSNHS-0008-00(256); PI #: 0008256						HOLE No. W-9 Sheet: 1 of 1 Location: Wall No. 5	
Azimuth: ---		Angle from Horizontal: 90		Surface Elevation (ft): 971.57		Station: 146+00, 28' Rt. of CL	
Drilling Equipment: CME 550				Drilling Method: HSA Auto Hammer			
Core Boxes: ---		Samples: 3		Overburden (ft): ---		Rock (ft): ---	
Logged By: MK				Date Drilled: 10/2/07			

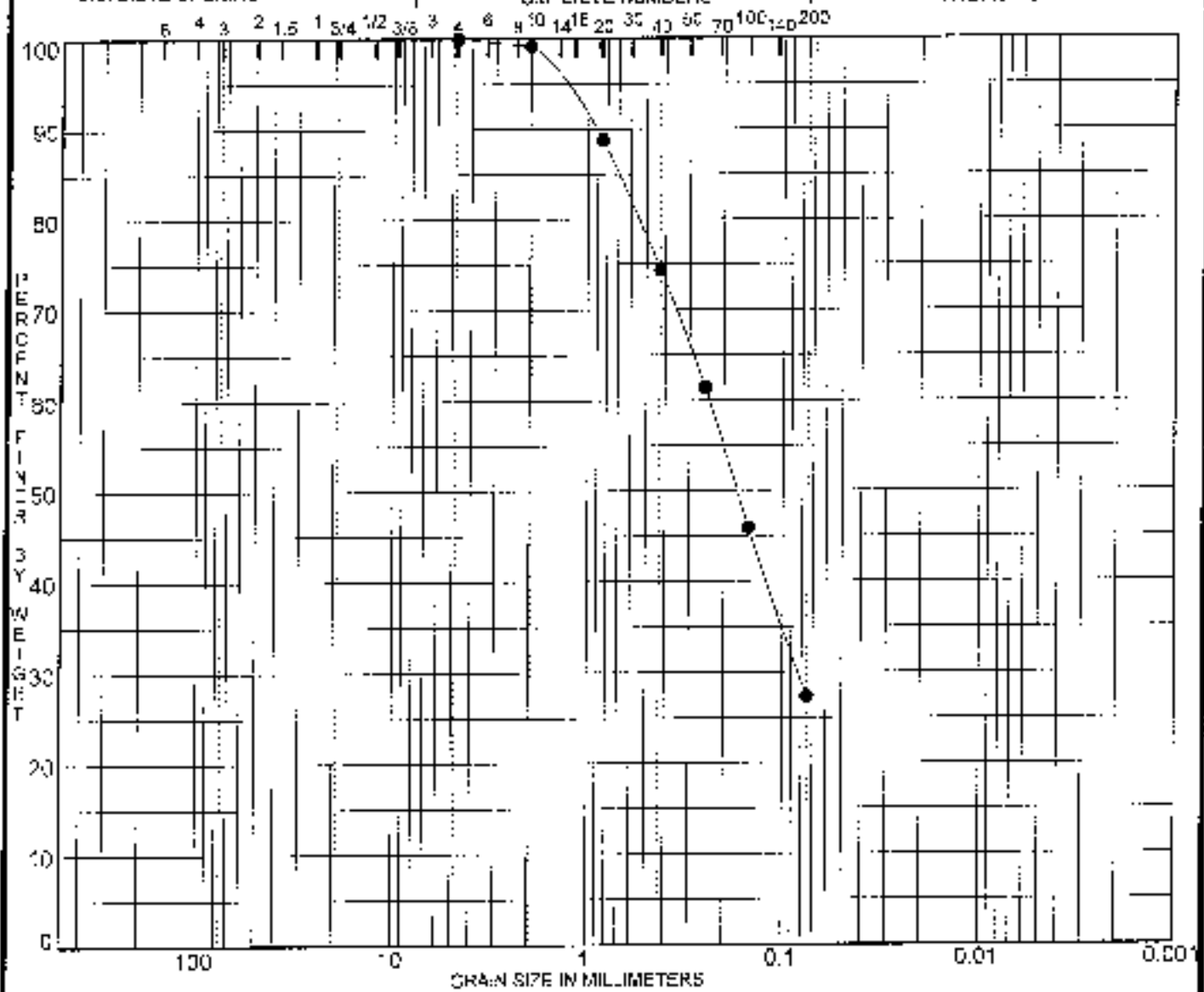
VERTICAL DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE	RECS	TDS %	MATERIAL DESCRIPTION	ELEVATION (feet)	STANDARD PENETRATION TEST DATA (blows/foot)	DEPTH (ft)
					TOP SOIL = 1 inch	971.5		0
		SS			RESIDUUM: Stiff brown and tan medium to fine sandy SILT	970	10	1
5		SS			Firm reddish brown and tan medium to fine sandy SILT (micaceous)	965	10	9
10		SS						8
Boring terminated @ 10 feet below existing ground surface. Groundwater was not encountered @ time of boring completion.						Bottom of Wall		

SS - Split Spoon ST - Shelby Tube NO - Rock Core, 1-1/8"		NX - Rock Core, 2-1/8" CU - Cullings CT - Continuous Tube		HSA - Hollow Stem Auger CFA - Continuous Flight Auger DC - Drilling Casing		RW - Rotary Wash RC - Rock Core		Hole No. <div style="text-align: center; font-weight: bold; font-size: 1.2em;">W-9</div>
--	--	---	--	--	--	------------------------------------	--	---

U.S. SIEVE OPENING IN INCHES

U.S. SIEVE NUMBERS

HYDROMETER



COBBLES

GRAVEL

SAND

SILT OR CLAY

coarse

fine

coarse

medium

fine

Specimen Identification

Soil Description

MC%

LL

PL

PI

Cr

Cu

W-2 S-5
(18.5-20 ft)

Tan, brown and gray silty medium to fine SAND
(micaceous)

Specimen Identification

D100

D60

D30

D15

%Gravel

%Sand

%Silt

%Clay

W-2 S-5
(18.5-20 ft)

4.75

0.24

0.083

0.0

72.7

27.3

PROJECT I-575/CR 171 (Big Shanty Rd), Cobb County, GA
 GDOT Proj. # CSNHS-0008-00(258); PI # 0008256

JOB NO.
DATE

171-3099 C
12/2/07

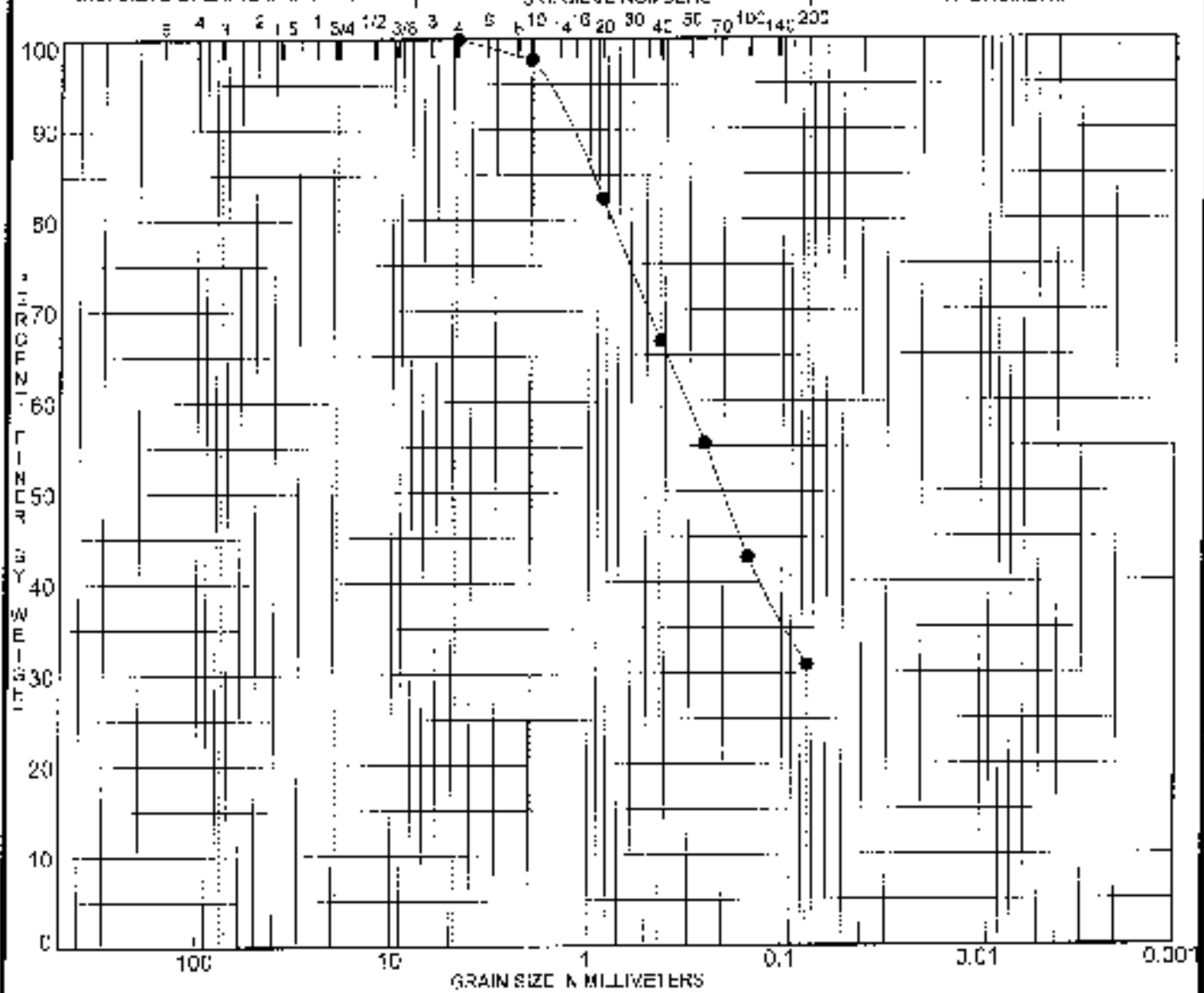


GRADATION CURVE

U.S. SIEVE OPENING IN INCHES

U.S. SIEVE NUMBERS

HYDROMETER



COBBLES

GRAVEL

SAND

SILT OR CLAY

coarse

fine

coarse

medium

fine

Specimen Identification

Soil Description

MC%

LL

FL

PI

Cc

Cu

W-4 S-3
(8.5-10 ft)

Tan and brown silty medium to fine SAND
(micaceous)

Specimen Identification

D100

D60

D30

D10

%Gravel

%Sand

%Silt

%Clay

W-4 S-3
(8.5-10 ft)

4.75

0.31

0.0

69.1

30.9

PROJECT I-575/CR 171 (Big Shanty Rd), Cobb County, GA
 GDOT Proj. # CSNHS-0008-00(256); PI # 0008256

JOB NO.
DATE

171-3099 C
12/2/07

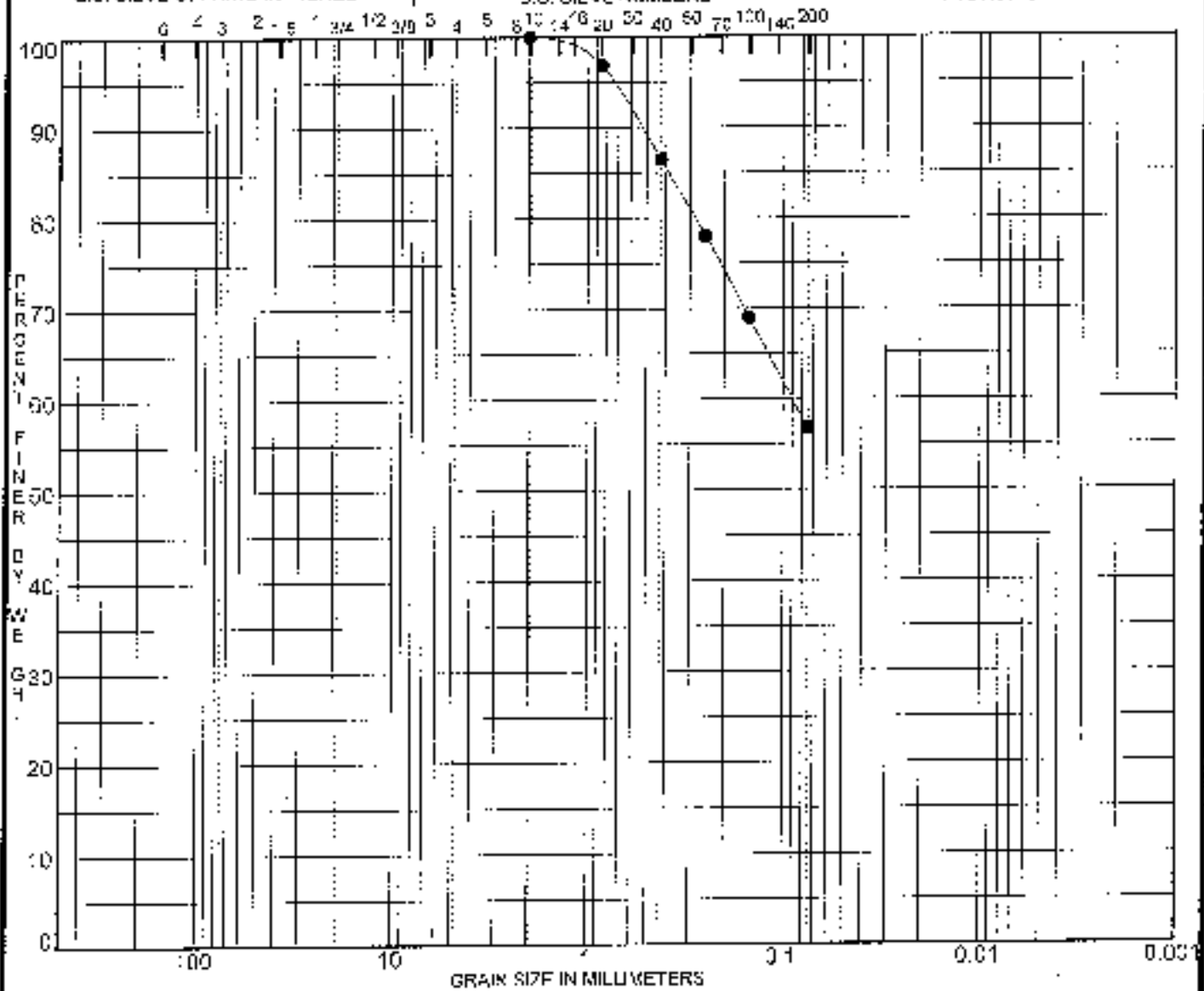


GRADATION CURVE

U.S. SIEVE OPENING IN INCHES

U.S. SIEVE NUMBERS

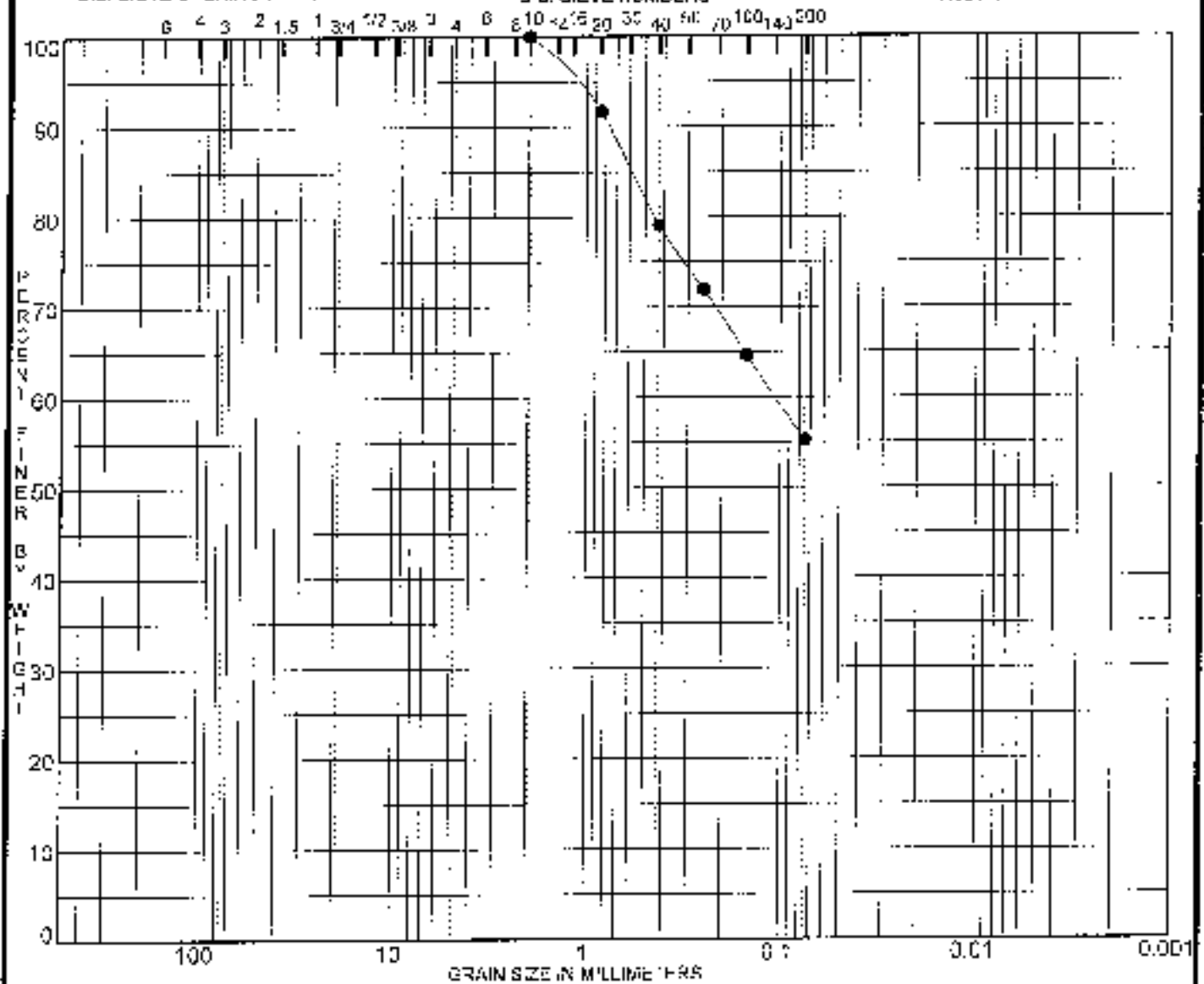
HYDROMETER



U.S. SIEVE OPENING IN INCHES

U.S. SIEVE NUMBERS

HYDROMETER



COBBLES

GRAVEL

SAND

SILT OR CLAY

coarse

fine

coarse

medium

fine

Specimen Identification

Soil Description

MO%

LL

PL

P

Co

Cu

• W-6 S-6
(23.5-25 ft)

Black, tan and brown medium to fine sandy SILT
(micaceous)

Specimen Identification

D100

D60

D30

D10

%Gravel

%Sand

%Silt

%Clay

• W-6 S-6
(23.5-25 ft)

2.00

0.11

0.0

44.8

55.2

PROJECT I-575/CR 171 (Big Shanty Rd), Cobb County, GA
GDOT Proj. # CSNHS-0003-00(256); PI # 0008256

JOB NO. 171-3099 C
DATE 12/2/07

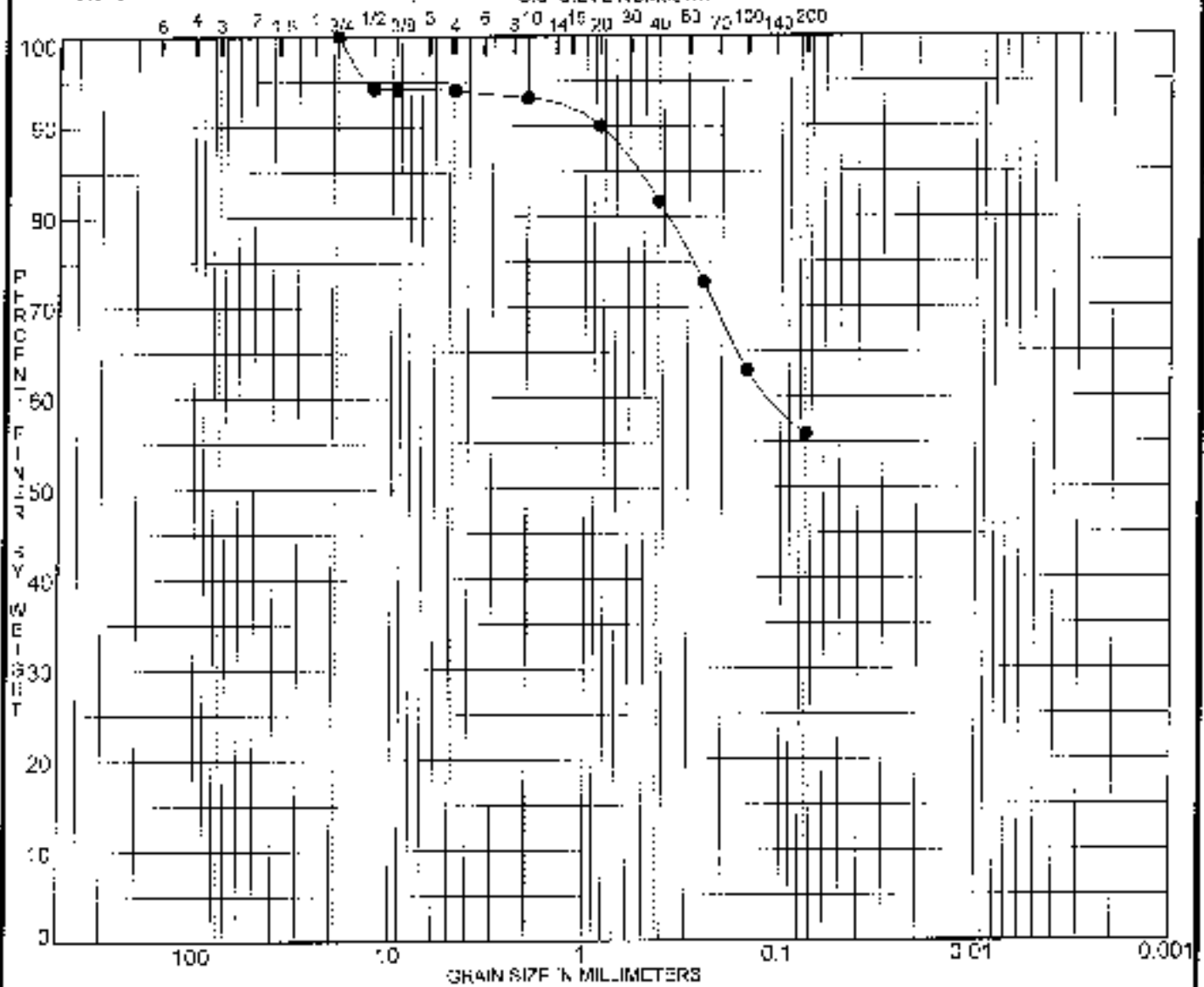


GRADATION CURVE

U.S. #4 OPENING IN INCHES

U.S. SIEVE NUMBERS

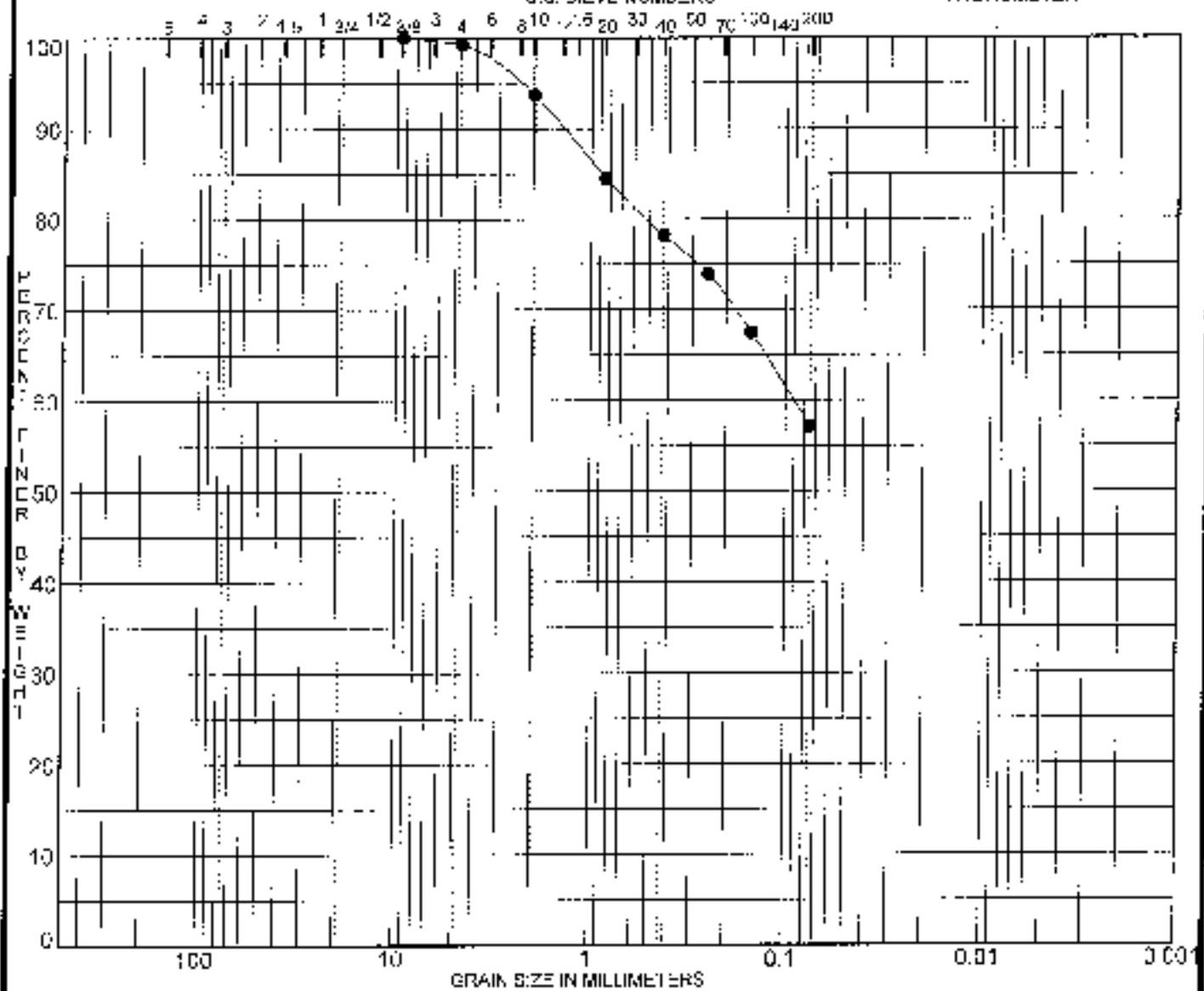
HYDROMETER



U.S. SIEVE OPENING IN INCHES

U.S. SIEVE NUMBERS

HYDROMETER



COBBLES

GRAVEL

SAND

SILT OR CLAY

coarse

fine

coarse

medium

fine

Specimen Identification

Soil Description

MC%

LL

PL

PI

Cc

Cu

W-8 S-2 (3.5-5 ft) Brown coarse to fine sandy SILT (micaceous)

Specimen Identification

D100

D60

D30

D10

%Gravel

%Sand

%Silt

%Clay

W-8 S-2 (3.5-5 ft)

9.60

0.09

0.7

42.2

57.2

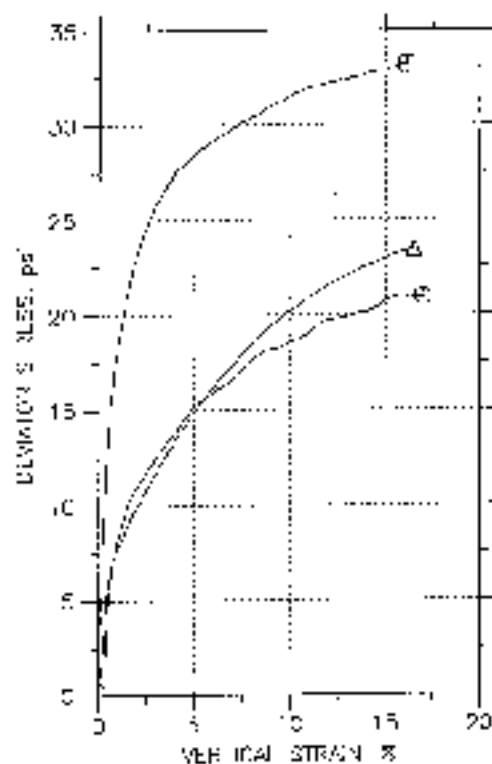
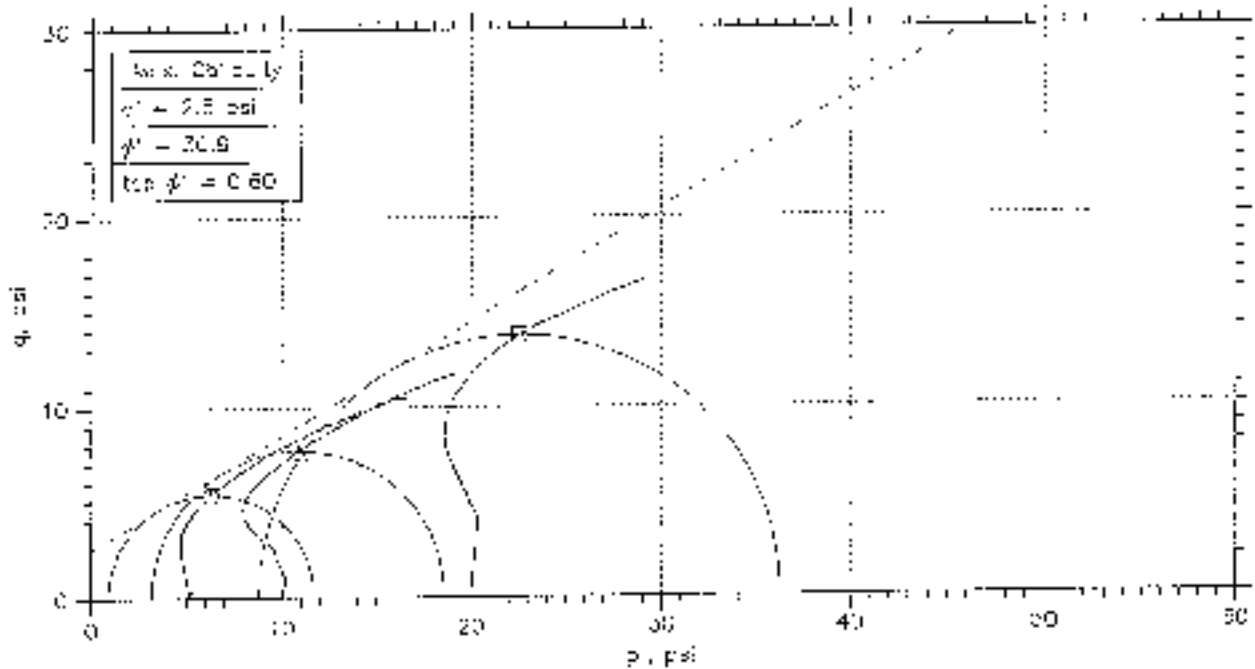
PROJECT I-575/CR 171 (Big Shanty Rd), Cobb County, GA
 GDOT Proj. # CSNHS-0008-00(256); PI # 0008256

JOB NO. 171-3099 C
 DATE 12/2/07



GRADATION CURVE

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767



Sample	C	A	J
Sample No.	ST-1	ST-1	ST-1
Test No.	8065	8055.2	8055.3
Depth	10-12 ft.	10-12 ft.	0-12 ft.
Initial	Diameter, in.	2.857	2.857
	Height, in.	6.007	6.007
	Water Content, %	35.3	33.0
	Dry Density, pcf	81.74	81.84
Before Shear	Saturation, %	98.3	93.0
	Void Ratio	0.952	0.932
	Water Content, %	35.2	35.0
	Dry Density, pcf	83.78	80.0
Before Shear	Saturation, %	100.0	100.0
	Void Ratio	0.975	0.925
	Back Press., psi	132.	128.
	Ver. Eff. Cons. Stress, psi	5.004	10.
Before Shear	Shear Strength, psi	14.47	11.72
	Strain at Failure, %	16.1	16.5
	Strain Rate, $\%/ \text{min}$	0.1	0.1
	d-value	0.20	0.18
Before Shear	Estimated Specific Gravity	2.65	2.65
	Liquid Limit	---	---
	Plastic Limit	---	---

Project: I-57E over Big Sandy Rd.

Location: Wall No 4 ST 140+00.30

Project No.

Series: R-9-7

Sample Type: Shelby Tube

Description: Red Brown & Grey Sandy ~~Clay~~ Silt

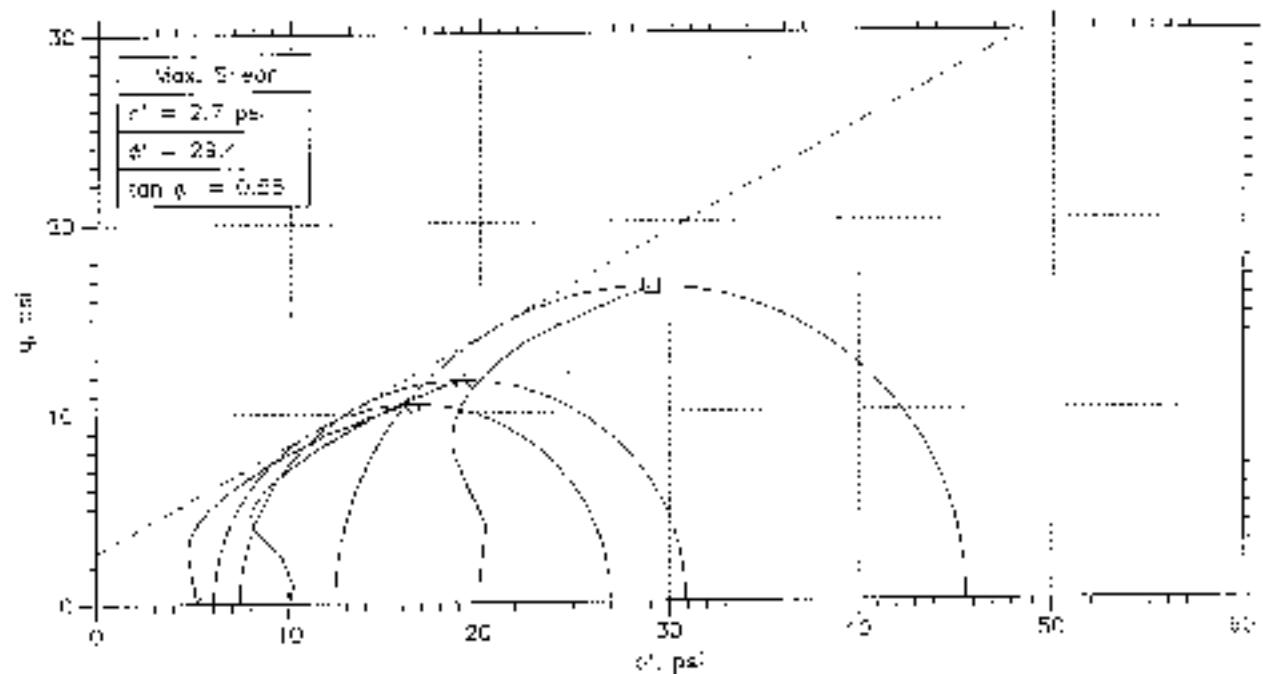
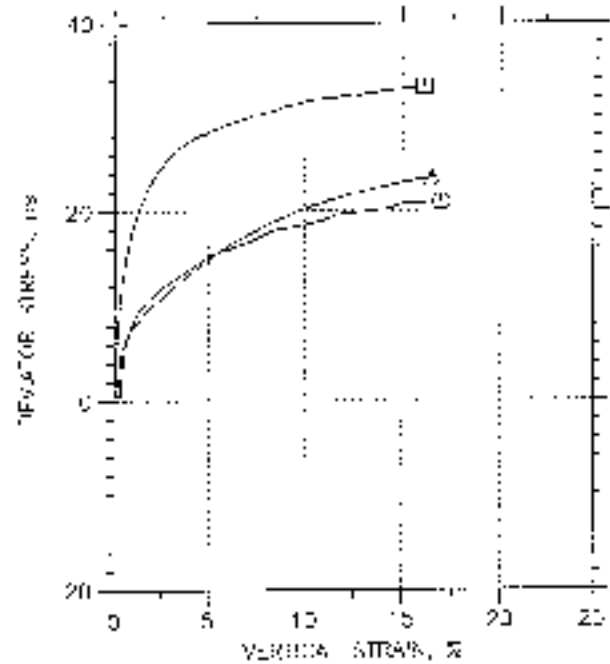
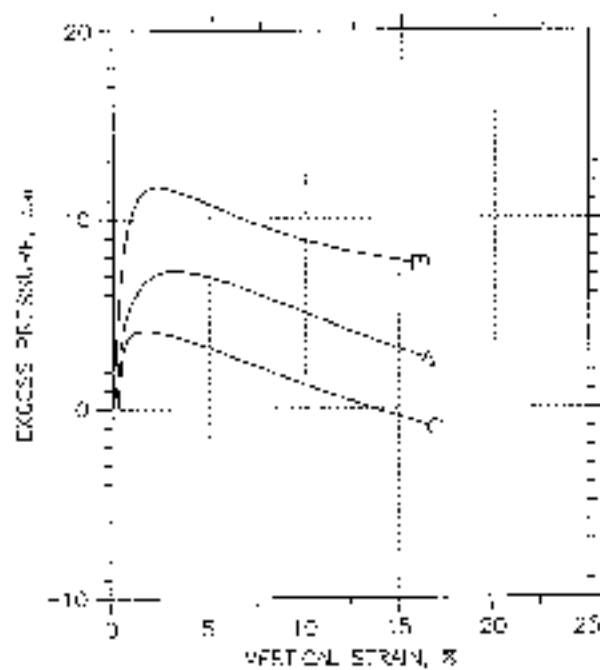
Remarks:



Phase calculations based on soil type and of test.

* Saturation is set to 100% for phase calculations.

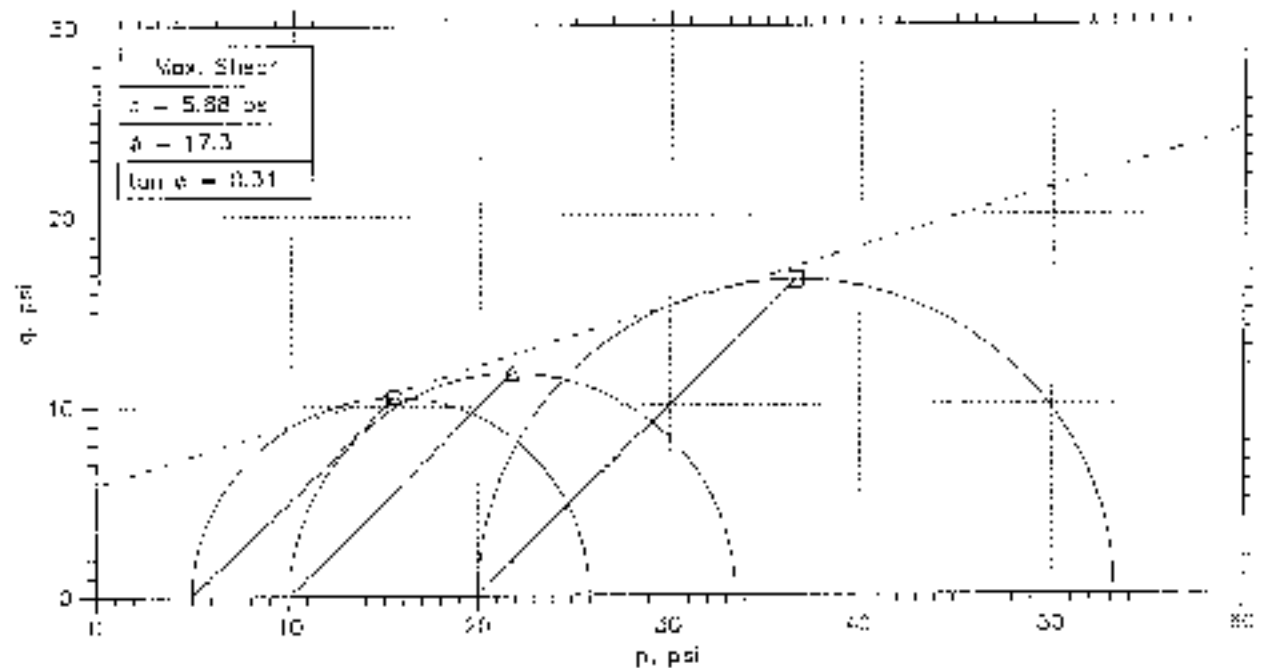
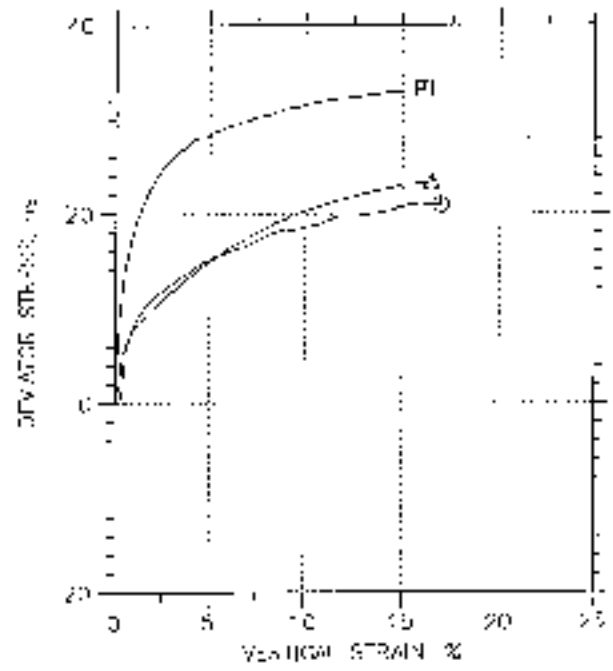
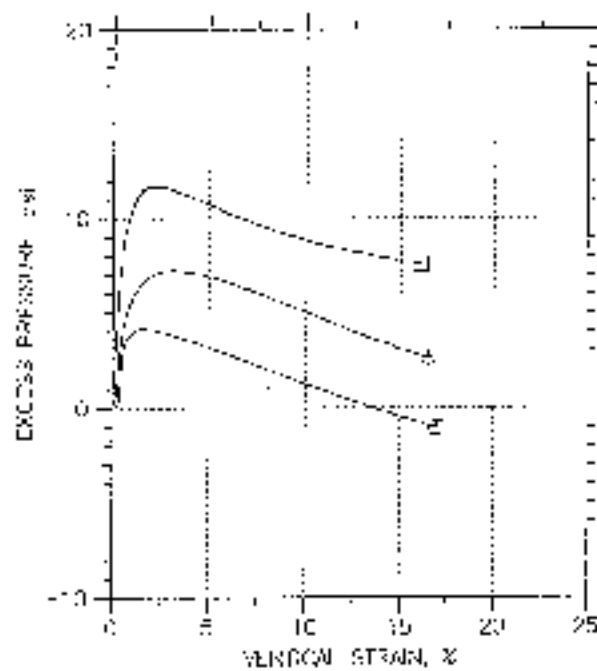
CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767



	Sample No.	Test No.	Depth	Tested by	Test Date	Checked By	Drawn Date	Test File
A	S	8085.1	10-12 ft.	FW	10/31/07	FW		8085.1 2547.ppt
A	S	8085.2	10-12 ft.	FW	10/31/07	FW		8085.2 2548.ppt
A	S	8085.3	10-12 ft.	FW	10/31/07	FW		8085.3 2549.ppt

	Project: 1570 Over E. Shurly		Location: Wall No. 4 RT 140+30		Project No.:
	Boring No.: 8085		Sample Type: Silty		John
	Description: Red Brown & Brown Silty Clay Silt				
	Remarks:				

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767



Sample No.	Test No.	Depth	Tested By	Test Date	Checked By	Check Date	Test File
SI-1	SC55.1	13-12 ft	HL	10/21/07	JW		SC55.1_2547.dat
SI-1	SC55.2	13-12 ft	HL	10/21/07	JW		SC55.2_2548.dat
SI-1	SC55.3	13-12 ft	HL	10/21/07	JW		SC55.3_2549.dat

	Project: -575 over Big Shanty Rd station: Sta. 4+57.140-50.00		Project No:
	Boring No. W-7		Soils Type: Shale Clay
	Description: Red Brown & Brown Sandy Shale Silt		
	Remarks:		

APPENDIX II

DEPARTMENT OF TRANSPORTATION

OFFICE OF MATERIALS AND TEST, FOREST PARK, GEORGIA
SOILS ENGINEERING AND GEOLOGY BRANCH

BRIDGE SUBSURFACE INVESTIGATION

CSN IS-0008-00 (255)
 PROJECT P. No. 0000206 COUNTY Cobb DATE 5/18/76
 LOCATION STILLWATER CULVERT (Hwy. 400, Shady Road) BORING NO. 3
 BENT NO. 1 FOOTING GROUND ELEV. 954.6
 PROPOSED FOOTING ELEV. PARTY CHIEF P. J. HARRIS

DEPTH	BORING LOG	SAMPLE NO.	DEPTH	UNITED	W	T	Gs	G	ϕ	DU	LA	PI	% SOL	% CLAY	e
	Gr. EL. <u>954.6</u>														
	Loose Mica. Micac.														
950	Clayey Sandy Silt	1s	8												
SWL	Very Loose Mica. Micac. Sandy Silt	2s	3												
940	Loose Sand	3s	10												
	Medium Dense Mica.	4s	5												
930	Micac. Sandy Silt	5s	11												
	Very Dense Micac.	6s	60-8												
920	Loose Weathered Rock	7s	HB												
	Very Dense Mic. Micac. Sandy Silt		60-4												
910	Loose Weathered Rock	8s	HB												
	End Drilling														

The information on this report is based on the data furnished by the contractor and is not to be used for any purpose other than that for which it was prepared.

No responsibility is assumed for the accuracy or completeness of the information furnished by the contractor.

The information on this report is not to be used for any purpose other than that for which it was prepared.

DEPARTMENT OF TRANSPORTATION

OFFICE OF MATERIALS AND TEST, FOREST PARK, GEORGIA
SOILS ENGINEERING AND GEOLOGY BRANCH

BRIDGE SUBSURFACE INVESTIGATION

CSNHS-0008-05 (255)

PROJECT LINE 005324P COUNTY Cobb DATE 5/19/76LOCATION GA/ALAB. CR. 17.1 (Bldg. on Rly Road) BORING NO. B-2BENT NO. 1 ROUTE NO. GROUND ELEV. 953PROPOSED FOOTING ELEV. PARTY CHIEF Parsons

ELEV.	BORING LOG	SAM. TUB	BLOW	UNITED	W	γ	Gs	C	ρ	EC	LL	PI	% SAND	% CLAY	C
	Gr. El. <u>7</u>														
950															
940	Very Loose to Loose Milt. Micss. Clayey Sandy Silt	1s	6												
930	Loose Milt. Micss. Sandy Silt	2s	9												
	Dense Same	3s	35												
920		4s	30=7												
		5s	30=8												
910	Very Dense Milt. Micss. Sandy Silt	6s	60=3												
			60=1												
	End Drilling														

The Department of Transportation hereby certifies that the boring log and soil test results are correct and reliable for the purposes of the design and construction of the bridge. The boring log and soil test results are the property of the Department of Transportation and shall not be used for any other purpose without the written consent of the Department of Transportation.

For the Department of Transportation: _____
 Date: _____
 Title: _____

OFFICE OF MATERIALS AND TEST, FOREST PARK, GEORGIA
SOILS ENGINEERING AND GEOLOGY BRANCH

BRIDGE SUBSURFACE INVESTIGATION

PROJECT CHHS-2009-02 (256)
= NO. 011-706 COUNTRY Gabon DATE 6/18/76

LOCATION -575 over CR 141 (Eg. Shandy Road) BORING NO. 0-1

RENT NO. 1 FOOTING FOOTING GROUND ELEV. 953.2

PROPOSED FOOTING ELEV. _____ PARTY ENTER. Pulliam

[illegible]

DEPARTMENT OF TRANSPORTATION

OFFICE OF MATERIALS AND TEST, FURST PARK, GEORGIA
SULS ENGINEERING AND GEOLOGY BRANCH

BRIDGE SUBSURFACE INVESTIGATION

PROJECT DSNHS-0003-C0 (256) PLAC LJOH256 COUNTRY Camb DATE 5/18/75
LOCATION 1005 over CR 17, 10g Shanly Road BORING NO. B-1
BENT NO. 2 FOOTING GROUND ELEV. 251.7
PROPOSED FOOTING ELEV. PARTY CHIEF PulHom

[illegible]

DEPARTMENT OF TRANSPORTATION

OFFICE OF MATERIALS AND TEST, FOREST PARK, GEORGIA
SOILS ENGINEERING AND GEOLOGY BRANCH

BRIDGE SUBSURFACE INVESTIGATION

PROJECT CENHS-0036-JD (296)
PLNC 007E256 COUNTY Gobb DATE 5/8/76

LOCATION I-75 over CR 17 "Elgin Shady Side" BOMBER NO. D-0

BENT NO. 7 FOOTING _____ GROUND ELEV. 952.2

PROPOSED FOOTING ELEV. _____ PARTY CHECKED Pullino

[illegible]

DEPARTMENT OF TRANSPORTATION

OFFICE OF MATERIALS AND TEST, FOREST PARK, GEORGIA
SOILS ENGINEERING AND GEOLOGY BRANCH

BRIDGE SUBSURFACE INVESTIGATION

OSM IS 1008-20 (200)
 PROJECT P. NO. CC0255 COUNTY Gobb DATE 6/10/76
 LOCATION Highway 107 71 (B. J. Street Road) BORING NO. 3-7
 BENT NO. 1 FOOTING RECORD ELEV. 95.46
 PROPOSED FOOTING ELEV. PARTY CHIEF Purham

ELEV.	BORING LOG	FEET P.E.	BLOW	UNIFIED	W	S	Gs	C	S	MC	LL	PI	% MO	% CLAY	e
	Gr. El. <u>7</u>														
<u>950</u>	Med. Dse. Mils. Micas.														
<u>947</u>	Clayey Sandy Sil	1s	11												
	Very Loose Mils. Micas. Sandy Sil	2s	2												
<u>940</u>		3s	7												
	Loose Same	4s	10												
<u>930</u>		5s	11												
	Medium Dense Mils. Micas. Sandy Sil	6s	27												
<u>920</u>	Dense Same	7s	60-8												
	Very Dense Mils. Micas. Sandy Sil	8s	60-8												
	Very Dense Same														
	Practical Refusal														

The Department of Transportation reserves the right to amend or delete any information contained herein without notice. This report is for the use of the client only and should not be used for any other purpose. The client is responsible for the accuracy of the information provided and for the results of any tests or analyses performed on the samples. The Department of Transportation is not responsible for the accuracy of the information provided or the results of any tests or analyses performed on the samples.

DEPARTMENT OF TRANSPORTATION

OFFICE OF MATERIALS AND TEST, FOREST PARK, GEORGIA
SOILS ENGINEERING AND GEOLOGY BRANCH

BRIDGE SUBSURFACE INVESTIGATION

PROJECT DENHS-0008-00 (258) COUNTY Cobb DATE 5/19/76
 PIN 1016256 ROAD NO. 28
 LOCATION 10/6 over CR 175 (Hill St) only Road GROUND ELEV. 952.05
 BENT NO. 1 FOOTING _____ PARTY CHIEF Phillip
 PROPOSED FOOTING ELEV. _____

ELEV.	NOTING LOG	SAM. PLE	ELEV	UNITED	W	2	Ca	C	δ	DC	LA	FI	% 200	% CLAY	■
	Gr. El. <u>1</u>														
<u>950</u>															
<u>948</u>	V. Loe to Loose Milt.														
	Micas. Cy. Sandy Silt														
<u>940</u>															
		1s	6												
	Loose Milt. Micas.														
	Sandy Silt	2s	5												
<u>930</u>															
		3s	60-7'												
	Very Dense Sand	4s	60-9'												
		5s	60-4'												
<u>920</u>	Very Dense Sand														
	Very Dense Sand														
	End Drilling														

The Department of Transportation is not
 responsible for the accuracy of the
 data or the interpretation of the data
 or the use of the data for any purpose
 other than that for which it was
 collected. The user of the data is
 responsible for the accuracy of the
 data and the interpretation of the
 data.

DEPARTMENT OF TRANSPORTATION

OFFICE OF MATERIALS AND TEST, FOREST PARK, GEORGIA
SOILS ENGINEERING AND GEOLOGY BRANCH

BRIDGE SUBSURFACE INVESTIGATION

CSMHS-DCD8-00 (258)

PROJECT P. No. 00CQ250 COUNTY Cobb DATE 5/19/78
 LOCATION 576 over CR 17 Elgin Road, Elgin BORING NO. B-4
 BERT NO. FOOTING GROUND ELEV. 952.1
 PROPOSED FOOTING ELEV. PARTY CHIEF Pauline

ELEV.	BORING LOG	SAM. FILE	BLOW	UNITED	W	Y	G	C	S	SC	LL	PI	% SD	% CLAY	e
950	Gr. Fl.														
940	Very Loose to Loose Mic. Silts Clayey Sandy Silt														
930	Very Loose Mic. Silts, Sdy. Silt	1a	4												
	Loose Same	2a	6												
	Med. Dense Mic. Silts, Sdy. Silt	3a	13												
	Loose Same	4a	10												
920	Med. Dense Mic. Silts, Sdy. Silt	5a	14												
	Very Dse. Same	6a	RO-2												
	End Drilling														

The Department of Transportation has received the Laboratory report and the contractor's estimate of equipment costs for this investigation. The data will be reviewed by the engineer in charge of this investigation for the purpose of determining the accuracy of the estimate. The contractor's estimate of equipment costs will be reviewed by the engineer in charge of this investigation for the purpose of determining the accuracy of the estimate.

DEPARTMENT OF TRANSPORTATION

OFFICE OF MATERIALS AND TEST, FOREST PARK, GEORGIA
SOILS ENGINEERING AND GEOLOGY BRANCH

BRIDGE SUBSURFACE INVESTIGATION

PROJECT: CSNHS-0008-00 (256)
PI No. 100875E COUNTY Cobb DATE 5/19/78
LOCATION: -675 over CR 171 (By Shanty Road) BORING NO. B-5
TEST NO. 1 FOOTING GROUND ELEV. 952.45
PROPOSED FOOTING ELEV. PASTY CHIEF Fulton

ELSV.	BORING LOG	SAM. YLR	DELOW	UNITED	W	T	Ca	C	δ	BC	IL	PI	% SOL	% CLAY	g
950	Gr. EL. 7														
341	Very Loose to Loose Milt. Micos. Clayey Sandy Silt														
940	Very Loose Milt. Micos. Sandy Silt	1a	3												
		2a	5												
930	Loose Sand	3a	8												
		4a	9												
		5a	9												
920	Dense Milt. Micos. Sandy Silt	6a	37												
	M.Dse. Weathered Rock	7a	44												
910	Practical Refusal														

The Department of Transportation is using this description of soil conditions for general reference only. It is not intended to be used as a basis for design or construction. The user is responsible for the design and construction of the project. The user is also responsible for the interpretation of the data and for the use of the data in the design and construction of the project.

DEPARTMENT OF TRANSPORTATION

OFFICE OF MATERIALS AND TEST, FOREST PARK, GEORGIA
SOILS ENGINEERING AND GEOLOGY BRANCH

BRIDGE SUBSURFACE INVESTIGATION

PROJECT CENHS-0208 00 (258) COUNTY Conk DATE 5/17/78
P. No. 0030268
 LOCATION East over CR 71 (1/2 mi S of Hwy 100) BORING NO. E-III
 BENT NO. 2 FOOTING GROUND ELEV. 952.7
 PROPOSED FOOTING ELEV. PARTY CHIEF Pat H. H.

ELEV.	DESCRIPTION	DATE 1978	BLW	UNITED	W	T	CS	C	ϕ	EC	LL	FI	SS 200	% CLAY	σ
	Gr. El. <u>7</u>														
950															
948	Very Loose to Medium Dense Mtc. Miccs. Sandy Silt		1s	3											
940	Very Loose Sand		2s	6											
	Loose Mtc. Miccs. Sandy Silt		3s	8											
930			4s	14											
	Medium Dense Sand		5s	30											
920	Dsa. Mtc. Miccs. Sdy. Silt		6s	60-9											
			7s	60-7											
910	Very Dense Sand		8s	60-6											
	End Drilling														

The Department of Transportation hereby
 certifies that the boring was conducted
 in accordance with the provisions of the
 Federal Highway Administration's
 Manual for the Design and Construction
 of Bridges and Structures.

DEPARTMENT OF TRANSPORTATION

OFFICE OF MATERIALS AND TEST, FOREST PARK, GEORGIA
SOILS ENGINEERING AND GEOLOGY BRANCH

BRIDGE SUBSURFACE INVESTIGATION

CSNHS-0008-00 (256)

PROJECT - I-10, 200820E COUNTY Cobb DATE 5/12/78
 LOCATION - I-10, OVER CR 171 (Big Sandy Road) BORING NO. - 11
 BENT NO. 2 FOOTING GROUND ELEV. 854.40
 PROPOSED FOOTING ELEV. PARTY CHIEF Pufflum

ELEV.	FOOTING LOG	SAMPLE	FEET	NOTES	W	X	Ca	C	ϕ	PC	SL	VI	B NO	% CLAY	C
	Gr. E1.1														
950															
948	V. Lys. to Med. Dense Milt.														
	Micro. Clayey Silty														
940	Very Loose Milt.	1s	3												
	Micro. Sandy Silty	2s	5												
	Loose Sand	3s	8												
930		4s	9												
	Medium Dense Milt.	5s	21												
	Micro. Sandy Silty														
920		6s	60												
	Very Dense Sand	7s	60												
910		8s	60-9												
	Med. Dense Weathered Rock	Dr	HS												
	End Drilling														

The Department of Transportation is not responsible for the accuracy of the data reported in this report. The data is the property of the client and should be used only for the purpose for which it was collected.

DEPARTMENT OF TRANSPORTATION

OFFICE OF MATERIALS AND TEST, FOREST PARK, GEORGIA
SOILS ENGINEERING AND GEOLOGY BRANCH

BRIDGE SUBSURFACE INVESTIGATION

PROJECT USNHS-0208-00 (256) COUNTY Cobb DATE 5/12/76
 LOCATION I-975 over GA 171 (Belt Shanty Road) BORING NO. D-12
 BENT NO. 2 FOOTING GROUND ELEV. 965.05
 PROPOSED FOOTING ELEV. PARTY CHIEF Pulliam

ELEV.	BORING LOG	SAM. PLS.	BLOW	WATER	W	T	Cu	C	ϕ	EC	LL	PT	% S00	% CLAY	C
	Gr. El. <u>7</u>														
<u>958</u>	Med. Dns. Brown Gray Mids. Clayey Silt	<u>1s</u>	<u>16</u>												
		<u>2s</u>	<u>3</u>												
<u>940</u>	Very Loose Milt. Mids. Sandy Silt	<u>3s</u>	<u>3</u>												
		<u>4s</u>	<u>6</u>												
<u>930</u>	Medium Dense Milt. Mids. Sandy Silt	<u>5s</u>	<u>17</u>												
		<u>6s</u>	<u>31</u>												
<u>920</u>		<u>7s</u>	<u>60-9</u>												
		<u>8s</u>	<u>60-5</u>												
<u>910</u>	Very Dense Milt. Mids. Sandy Silt	<u>9s</u>	<u>60</u>												
		<u>10s</u>	<u>60-2</u>												
	End Drilling														

The Department of Transportation is not responsible for the accuracy of the data furnished by the contractor. The contractor is responsible for the accuracy of the data furnished by the contractor. The contractor is responsible for the accuracy of the data furnished by the contractor.